



Marine & Offshore

Certificate number: 52006/B0 BV

File number: ACE6/848/1

Product code: 2897H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*  
**YASKAWA ELECTRIC CORPORATION**  
 Yukuhashi - JAPAN

*for the type of product*  
**INVERTERS**  
 Matrix Converter U1000

**Requirements:**

Bureau Veritas Rules for the Classification of Steel Ships

EC Code: 21

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

**This certificate will expire on: 06 Feb 2027**

**For Bureau Veritas Marine & Offshore,**

At BV KOBE, on 06 Feb 2022,

Shinichi Takemoto



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017

This certificate consists of 5 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION :

The **Matrix Converter U1000** is low harmonics and regenerative motor drive units for controlling asynchronous AC induction motors, synchronous AC motors and motors recommended by Yaskawa Electric Corporation.

Models are designated as follows

CIMR -  $\frac{U}{I}$  -  $\frac{\bullet}{II}$  -  $\frac{4}{III}$  -  $\frac{\bullet}{IV}$  -  $\frac{\bullet\bullet\bullet}{V}$  -  $\frac{\Delta}{VI}$  -  $\frac{\bullet}{VII}$  -  $\frac{\bullet}{VIII}$  -  $\frac{\bullet}{IX}$

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			
		T: Asia Spec.			
V	Customer Specification	A: Standard model (*1)			
		E: Internal EMC-filter model			
VI	Rated Output	Model	ND Rated current	HD Rated current	Customer Specification
		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 (see limitation § 4.5)			
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			

Legend: ND = Normal Duty; HD = Heavy Duty

(\*1) For standard models (code 'A') a designated stand-alone EMC filter is to be used.

#### 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.

**2. DOCUMENTS AND DRAWINGS :**

Technical Manual n° SIEP C710636 02B

## List of drawings - Drives:

- EZZ902450 - Rev. 2 / EZZ902458 - Rev. 2 / EZZ902479 - Rev. 1 - Dimensional diagram (model 0011-0034)
- EZZ902451 - Rev. 3 / EZZ902459 - Rev. 2 / EZZ902480 - Rev. 1 - Dimensional diagram (model 0040-0077)
- EZZ902452 - Rev. 3 / EZZ902460 - Rev. 2 / EZZ902481 - Rev. 1 - Dimensional diagram (model 0096-0124)
- EZZ902453 - Rev. 2 / EZZ902461 - Rev. 2 / EZZ902482 - Rev. 1 - Dimensional diagram (model 0156-0180)
- EZZ902454 - Rev. 3 / EZZ902462 - Rev. 2 / EZZ902483 - Rev. 2 - Dimensional diagram (model 0216-0240)
- EZZ902455 - Rev. 2 / EZZ902463 - Rev. 1 / EZZ902484 - Rev. 1 - Dimensional diagram (model 0302-0361)
- EZZ902456 - Rev. 1 / EZZ902464 - Rev. 1 / EZZ902485 - Rev. 1 - Dimensional diagram (model 0414)
- EZZ902516 - Rev. 0 / EZZ902518 - Rev. 0 / EZZ902524 - Rev. 0 - Dimensional diagram (model 0477-0590)
- EZZ902517 - Rev. 0 / EZZ902519 - Rev. 0 / EZZ902525 - Rev. 0 - Dimensional diagram (model 0720-0930)
- DACT36931 - Rev. 7 / DACT37326 - Rev. 2 - Assembly diagram (0011-0034)
- DACT37113 - Rev. 5 / DACT37327 - Rev. 3 - Assembly diagram (0040-0065)
- DACT37553 - Rev. 2 / DACT37554 - Rev. 2 - Assembly diagram (0077)
- DACT37017 - Rev. 5 / DACT37311 - Rev. 2 - Assembly diagram (0096-0124)
- DACT37085 - Rev. 6 / DACT37328 - Rev. 2 - Assembly diagram (0156-0180)
- DACT37219 - Rev. 6 / DACT37343 - Rev. 4 - Assembly diagram (0216-0240)
- DACT37364 - Rev. 5 / DACT37367 - Rev. 4 - Assembly diagram (0302)
- DACT37363 - Rev. 5 / DACT37366 - Rev. 4 - Assembly diagram (0361)
- DACT37086 - Rev. 5 / DACT37365 - Rev. 4 - Assembly diagram (0414)
- DACT37838 - Rev. 1 - Assembly diagram (0477-0590)
- DACT37839 - Rev. 1 - Assembly diagram (0720-0930)
- 71636-UA4X0011XXXXR - Rev. 1 / 71636-UA4E0011XXXXR - Rev. 1 - Elementary diagram (model 0011)
- 71636-UA4X0014XXXXR - Rev. 1 / 71636-UA4E0014XXXXR - Rev. 1 - Elementary diagram (model 0014)
- 71636-UA4X0021XXXXR - Rev. 1 / 71636-UA4E0021XXXXR - Rev. 1 - Elementary diagram (model 0021)
- 71636-UA4X0027XXXXR - Rev. 1 / 71636-UA4E0027XXXXR - Rev. 1 - Elementary diagram (model 0027)
- 71636-UA4X0034XXXXR - Rev. 1 / 71636-UA4E0034XXXXR - Rev. 1 - Elementary diagram (model 0034)
- 71636-UA4X0040XXXXR - Rev. 1 / 71636-UA4E0040XXXXR - Rev. 1 - Elementary diagram (model 0040)
- 71636-UA4X0052XXXXR - Rev. 1 / 71636-UA4E0052XXXXR - Rev. 1 - Elementary diagram (model 0052)
- 71636-UA4X0065XXXXR - Rev. 1 / 71636-UA4E0065XXXXR - Rev. 1 - Elementary diagram (model 0065)
- 71636-UA4X0077XXXXR - Rev. 1 / 71636-UA4E0077XXXXR - Rev. 1 - Elementary diagram (model 0077)
- 71636-UA4X0096XXXXR - Rev. 1 / 71636-UA4E0096XXXXR - Rev. 1 - Elementary diagram (model 0096)
- 71636-UA4X0124XXXXR - Rev. 1 / 71636-UA4E0124XXXXR - Rev. 1 - Elementary diagram (model 0124)
- 71636-UA4X0156XXXXR - Rev. 1 / 71636-UA4E0156XXXXR - Rev. 1 - Elementary diagram (model 0156)
- 71636-UA4X0180XXXXR - Rev. 1 / 71636-UA4E0180XXXXR - Rev. 1 - Elementary diagram (model 0180)
- 71636-UA4X0216XXXXR - Rev. 1 / 71636-UA4E0216XXXXR - Rev. 2 - Elementary diagram (model 0216)
- 71636-UA4X0240XXXXR - Rev. 1 / 71636-UA4E0240XXXXR - Rev. 2 - Elementary diagram (model 0240)
- 71636-UA4X0302XXXXR - Rev. 1 / 71636-UA4E0302XXXXR - Rev. 1 - Elementary diagram (model 0302)
- 71636-UA4X0361XXXXR - Rev. 1 / 71636-UA4E0361XXXXR - Rev. 1 - Elementary diagram (model 0361)
- 71636-UA4X0414XXXXR - Rev. 1 / 71636-UA4E0414XXXXR - Rev. 1 - Elementary diagram (model 0414)
- 71636-UA4X0477XXBR - Rev. 0 - Elementary diagram (model 0477)
- 71636-UA4X0590XXBR - Rev. 0 - Elementary diagram (model 0590)
- 71636-UA4X0720XXBR - Rev. 0 - Elementary diagram (model 0720)
- 71636-UA4X0900XXBR - Rev. 0 - Elementary diagram (model 0900)
- 71636-UA4X0930XXBR - Rev. 0 - Elementary diagram (model 0930)
- VGI-Q1612-11 Main Component List dated 17/01/2017

## List of drawings - Filter modules:

- EZZ902538 - Rev. 1 - Dimensional diagram
- DACT37600 - Rev. 4 - Assembly diagram
- EUJ711800R - Rev. 1 - Elementary diagram (model EUJ71180)
- EUJ711810R - Rev. 1 - Elementary diagram (model EUJ71181)
- EUJ711820R - Rev. 1 - Elementary diagram (model EUJ71182)
- EUJ711830R - Rev. 0 - Elementary diagram (model EUJ71183)
- EUJ711840R - Rev. 0 - Elementary diagram (model EUJ71184)
- EUJ711850R - Rev. 0 - Elementary diagram (model EUJ71185)
- EUJ711860R - Rev. 0 - Elementary diagram (model EUJ71186)
- EUJ711870R - Rev. 0 - Elementary diagram (model EUJ71187)
- EUJ711880R - Rev. 0 - Elementary diagram (model EUJ71188).

**3. TEST REPORTS :****Yaskawa Electric Corporation:**

- Test report N°VGI-T1710-04, dated 10 Oct. 2017, tests witnessed by surveyors of IACS member Classification Societies
- Test report for IEC60146-1-1 N°VGI-Q1806-02, dated 07 Jun. 2018.

**TÜVRheinland Japan Ltd.:**

- Test report N°50089828-001, dated 20 Sep. 2017, tests witnessed by surveyors of IACS member Classification Societies

**TÜV SÜD Product Service GmbH:**

- Test report N°73548024a, dated 12 Jun. 2014
- Test report N°73554553, dated 29 Jul. 2015

**KEC Testing Division:**

- Test report N°A-241-16-E Version A, dated 30 Aug. 2017
- Test report N°A-242-16-E Version A, dated 30 Aug. 2017
- Test report N°A-243-16-E Version A, dated 30 Aug. 2017

**IPS Corporation Nagano EMC Center:**

- Test report N°EMC17082, dated 31 Aug. 2017

**For modification B0 version:****ADOX:**

- EMC Test Report No. 2021-018, dated 18-11-2021.
- EMC Test Report No. 2021-019, dated 18-11-2021.

**4. APPLICATION / LIMITATION :**

- 4.1 - BUREAU VERITAS Rules and Regulations for the Classification of Steel Ships.
- 4.2 - Approval valid for ships intended to be granted with the following additional class notations: **AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS.**
- 4.3 - BUREAU VERITAS Environmental Category, **EC Code: 21**
- 4.4 - The equipment fulfils the EMC requirements for installation in General Power Distribution Zones.
- 4.5 - Converters to be installed in an metallic enclosure providing a degree of protection in accordance with BV Rules in relation to the place of installation.
- 4.6 - Converters to be installed with vibration dampers (wire rope isolators) Enidine model WR4 / WR8 or equivalent at each attachment points.
- 4.7 - A radio noise filter of OKAYA Electric, model 3XYHB-105\*104 (500Vac) or equivalent is to be connected on power supply lines.
- 4.8 - Equipment covered by this Type Approval certificate has been tested according to requirements of IACS UR E10 rev7.

**5. PRODUCTION SURVEY REQUIREMENTS :**

- 5.1 - The converters are to be supplied by **YASKAWA ELECTRIC CORPORATION** in compliance with the type described in this certificate.
- 5.2 - This type of product is within the category HBV of Bureau Veritas Rule Note NR320 and as such does not require a BV product certificate.
- 5.3 - **YASKAWA ELECTRIC CORPORATION** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.
- 5.4 - For information, **YASKAWA ELECTRIC CORPORATION** has declared to Bureau Veritas the following production site:

**YASKAWA ELECTRIC CORPORATION**  
**13-1 Nishimiyaichi 2 chome, Yukuhashi**  
**Fukuoka 824-8511**  
**JAPAN**

**6. MARKING OF PRODUCT :**

- 6.1 - Trade name.
- 6.2 - Date of manufacture and serial number.
- 6.3 - Equipment type or model identification under which it was type-tested

**7. OTHERS :**

- 7.1 - It is **YASKAWA ELECTRIC CORPORATION**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.
- 7.2 - This certificate supersedes the Type Approval Certificate N° 52006/A1 BV issued on 27 Jun 2018 by the Society.

\*\*\* END OF CERTIFICATE \*\*\*