

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Frequency Converter**with type designation(s)
Matrix Converter U1000

Issued to

YASKAWA ELECTRIC CORPORATION
Yukuhashi Fukuoka Pref., Japan

is found to comply with

DNV GL rules for classification – Ships, offshore units, and high speed and light craft
DNV GL class programme DNVGL-CP-0395 – Type approval – Semiconductor converters**Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2017-12-07**This Certificate is valid until **2022-12-06**.DNV GL local station: **Hiroshima**for **DNV GL**Approval Engineer: **Georgy Abramenko**

Andreas Kristoffersen
Head of Section

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.



Job Id: **262.1-026038-1**
Certificate No: **TAE00002A7**

Name and place of manufacturer

YASKAWA ELECTRIC CORPORATION.

Manufacturer address: 13-1 Nishimiyaichi 2 Chome, Yukuhashi, Fukuoka 824-8511 Japan.

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 determined by following designation :

CIMR- U x 4 x xxxx A x x
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	T : Asia Spec.			
		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			
		E : Internal EMC-filter model			
VI	Rated Output	Model	Normal Duty Rated current, A	Heavy Duty Rated current, A	Customer Spec.
		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

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VII	Enclosure **	A :IP00
VIII	Countermeasure for environment resistance	x : Standard, B to Z
IX	Yaskawa internal design version	x : design version
*Type code designation A or E as per customer specification. 'A' stands for standard model ; 'E' stands for internal EMC-filter models. For 'A' versions stand-alone EMC filter to be used. **Please see application limitation for enclosure type.		

Harmonic Filter Modules

Model No.***	Combination with the converter****
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
*** 'y' stands for number between 0 – 9 of design version that may be followed by a dot with an alphanumeric code of countermeasure for environment resistance. (for example: EUJ711800.M). **** 'X' is A, D, U, or T of Regional Specification digit.	

Voltage:	380V – 500V for standard model, 380V – 480V for internal EMC-filter model
Voltage tolerance:	Steady state +6/-10%, transient state ±20%
Frequency:	50/60 Hz
Frequency tolerance:	Steady state ±5%, transient state ±10%
Ambient temperature:	0-45°C
Humidity:	Class B
Vibration class:	A
EMC class:	A, IEC 61800-3, C2 category

Application/Limitation

Pollution degree:

To be installed in an enclosure with an IP degree in accordance with DNV Rules w.r.t. location. IP 20 and 21 versions are limited to be used in pollution protected rooms (maximum pollution degree II).

Product certification:

Frequency converters larger than 100kW serving important or essential equipment are subjected for additional case by case based product certification. Documentation to be submitted for product certification shall be according DNVGL ship rules Pt.4 Ch.8 or DNVGL offshore standard D201, including reference to this type approval certificate and confirmation that the correct marine options and power ratings are used.

Type Approval documentation

Tests carried out

According to DNVGL-CP-0395.

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Marking of product

Yaskawa Electric Corp. – Type designation – Output – Input.

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to 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.

Assessment to be performed at 2, 3.5 year and at renewal.

END OF CERTIFICATE