THE VMC GROUP
The Power of Together™

YASKAWA

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certification No.

VMA-49850-01C (REVISION 3)

Expiration Date: 03/31/2021

Certification Parameters:

The nonstructural products (mechanical and/or electrical components) listed on this certificate are CERTIFIED[1] FOR SEISMIC APPLICATIONS in accordance with the following building code[2] releases.

IBC 2009, 2012, 2015, 2018

The following model designations, options, and accessories are included in this certification. Reference report number **VMA-49850-01** as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

Yaskawa America, Inc. Variable Frequency Drives (VFD)
1000 Series 0.125HP-600HP 200V-600V

The above referenced equipment is **APPROVED** for seismic application when properly installed[3], used as intended, and contains a Seismic Certification Label referencing this Certificate of Compliance[4]. As limited by the tabulated values, below grade, grade, and roof-level installations, installations in essential facilities, for life safety applications, and/or of equipment containing hazardous contents are permitted and included in this certification with an Equipment Importance Factor assigned as I_P=1.5. The equipment is qualified by successful seismic shake table testing at the nationally recognized Dynamic Certification Laboratories under the witness of the ISO Accredited Product Certification Agency, The VMC Group.

Certified Seismic Design Levels			
Certified **IBC**	**Importance $I_P \le 1.5$** Soil Classes A-E Risk Categories I-IV Design Categories A-F	**$S_{DS} \le 2.000$ g**	**$S_{DS} \le 2.000$ g**
		z/h = 0.0	**z/h ≤ 1.0**
		Horizontal Design[5] $\frac{F_p}{W_p} = 0.4 S_{DS} I_p \frac{a_p}{R_p}\left(1 + 2\frac{z}{h}\right) \le$ **1.500 g**	
Test Datum **AC156**	ISO 17025 Laboratory Pre/Post-Shake Functionality Tri-axial, 5% Damping SRS	**$A_{FLEX-H} \le 3.200$ g**	**$A_{FLEX-V} \le 1.333$ g**
		$A_{RIG-H} \le 2.400$ g	**$A_{RIG-V} \le 0.533$ g**
		$ZPA_H \le 2.160$ g	**$ZPA_V \le 0.480$ g**

Certified Seismic Installation Methods[8]	
Directly to structural / non-structural w all	Directly to floor

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Certified Product Table:

Series	Type	Drive Model Designation	Nominal HP	Drive Frame Size	Max Weight [lbs]	Approved Mounting
A1000 & P1000	Standard	CIMR – (A/P)U2A(360 – 415)	150 – 175	12	218	Directly to Structural / Non-Structural Wall
		CIMR – (A/P)U4A(250 – 675)	200 – 600	12 to14	486	
		CIMR – (A/P)U5A(192 – 242)	200 – 250	12	235	
Z1000		CIMR – ZU2A(011 – 396)	3 – 150	1 to 8	218	
		CIMR – ZU4A(005 – 590)	3 – 500	1 to 10	487	
	Bypass	Z1B3B(001 – 124)	0.5 – 100	B3W1 – B3W4	550	
		Z1B3D(002 – 114)	0.5 – 40	B3W1 – B3W4	490	
	Configured	Z1C3B(001 – 124)	0.5 – 100	C3W1 – C3W4	505	
		Z1C3D(002 –114)	0.5 – 40	C3W1 – C3W4	465	
	Bypass	Z1B1B(240 – 590)	200 – 500	B1F1 – B1F2	2200	Directly to Floor
		Z1B1D(211 – 396)	75 – 150	B1F1	1700	
		Z1B3D(143 – 396)	50 – 150	B3F1 – B1F2	1350	
		Z1B3B(156 – 590)	125 – 500	B3F1	2100	
	Configured	Z1C1D(343 – 396)	125 – 150	C1F1	1300	
		Z1C1B(302 – 590)	250 – 500	C1F1 – C1F1T	1600	
		Z1C3D(143 – 396)	50 – 150	C3F1	1250	
		Z1C3B(156 – 590)	125 – 500	C3F1	1900	
J1000	Micro Drive	CIMR – JU2A00(01 – 20)	0.125 – 5	1 – 11	5.3	Directly to Structural / Non-Structural Wall
		CIMR – JUBA00(01 – 10)	0.125 – 3	1 – 10	4.0	
		CIMR – JU4A00(01 – 11)	0.5 – 7.5	5 – 11	5.3	
V1000		CIMR – VU2A00(01 – 69)	0.125 – 25	1 – 17	20.0	
		CIMR – VUBA00(01 – 18)	0.125 – 5	1 – 13	6.6	
		CIMR – VU4A00(01 – 11)	0.5 – 25	5 – 16	5.7	
P1000 IQPump Micro		CIMR – PW2A00(01 – 69)	0.125 – 25	1 – 17	20.1	
		CIMR – PWBA00(01 – 18)	0.125 – 5	1 – 13	8.2	
		CIMR – PW4A00(01 – 11)	0.5 – 25	5 – 16	8.2	

This certificate **includes** the product and factory supplied accessories and options listed in the tables above. The product and included accessories and options shall be a catalogue design and factory supplied. The product shall be installed and attached to the building structure per the manufacturer supplied seismic installation instructions. This certificate **excludes** all non-factory supplied accessories, including but not limited to enclosures, isolation/restraint devices, remote control panels, mounting brackets and other electrical/mechanical components.

IBC CERTIFIED THE VMC GROUP

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Notes and Comments:

1. All equipment listed herein successfully passed the seismic acceptance criteria for shake testing non-structural components and systems as set forth in the ICC AC-156. The Test Response Spectrum (TRS) enveloped the Required Response Spectrum (RRS) for all units tested. The units cited in this certification were representative sample(s) of a contingent of models and all remained captive and structurally sound after the seismic shake simulation. The units also remained functionally operational after the simulation testing as functional testing was completed by the equipment manufacturer before and after the seismic simulations. Although a seismic qualified unit inherently contains some wind resisting capacity, that capacity is undetermined and is excluded from this certification. Snow/Ice loads have been neglected and thus limit the unit to be installed both indoors (covered by an independent protective structure) and out of doors (exposed to accumulating snow/ice) for ground snow loads no greater than 30 psf for all applications.

2. The following building codes are addressed under this certification:
   IBC 2009 – referencing ASCE7-05 and ICC AC-156
   IBC 2012 – referencing ASCE7-10 and ICC AC-156
   IBC 2015 – referencing ASCE7-10 and ICC AC-156
   IBC 2018 – referencing ASCE7-16 and ICC AC-156

3. Refer to the manufacturer supplied installation drawings for anchor requirements and mounting considerations for seismic applications. Required anchor locations, size, style, and load capacities (tension and shear) may be specified on the installation drawings or specified by a 3rd party. Mounting requirement details such as anchor brand, type, embedment depth, edge spacing, anchor-to-anchor spacing, concrete strength, special inspection, wall design, and attachment to non-building structures must be outlined and approved by the Engineer of Record for the project or building. Structural walls, structural floors, and housekeeping pads must also be seismically designed and approved by the project or building Structural Engineer of Record to withstand the seismic anchor loads as defined on the installation drawings. The installing contractor is responsible for observing the installation detailed in the seismic installation drawings and the proper installation of all anchors and mounting hardware.

4. For this certificate and certification to remain valid, this certificate must correspond to the “Seismic Certification Label” found affixed to the unit by the factory. The label ensures the manufacturer built the unit in conformance to the IBC seismic design criteria set forth by the Certified Seismic Qualification Agency, The VMC Group, and meets the seismic design levels claimed by this certificate.

5. Mechanical, Electrical, and Plumbing connections to the equipment must be flexibly attached as to not transfer load through the connection. The structural integrity of any conduit, cable trays, piping, ductwork and/or flexible connections is the responsibility of others. This certification does not guarantee the equipment will remain compliant to NEMA, IP, UL, or CSA standards after a seismic event.

6. This certificate applies to units manufactured at:
   150 W Oakwood Road, Oak Creek, WI 53154
   1067 Johnson Drive, Buffalo Grove, IL 60089
   915 Jiaxin St, Cangchangcun, Maluzhen, Kiading Distric, Shanghai, 201818 China

7. This project follows The VMC Group’s ISO-17065 Scheme for Product Certification of Nonstructural Components.

8. The certified seismic installation methods states are a summary for all series this certificate covers, for more detailed information on the certified seismic installation methods, see the certified product tables.

John P. Giuliano, PE
President, The VMC Group

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