THE VMC GROUP
The Power of Together™

YASKAWA

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS

Certification No.

VMA-47676-01C (REVISION 7)

Expiration Date: 08/31/2020

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 2006, 2009, 2012, 2015

The following model designations, options, and accessories are included in this certification. Reference report number **VMA-47676-01** 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)
Z1000 and A1000 Series 0.5HP-600HP 208V-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 Clark Dynamic Test Laboratory Inc. and University of California Berkeley Pacific Earthquake Engineering Research Center under the witness of the ISO Accredited Product Certification Agency, The VMC Group.

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

Certified Seismic Installation Methods	
Directly to structural wall	Directly to non-structural wall

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Certified Product Table:

VFD		Model Number Designation[2]						
Series	Type	Standard Drive Model Series	Output Current Rating	Power Options	Control Options	Nominal HP	Rated Input Voltage	NEMA Rating
A1000	Standard	CIMR-AU2A	-0(360 – 415)	-XXX[1]		150 – 175	208V	Type 1
		CIMR-AU4A	-0(250 – 675)	-XXX		200 – 600	480V	
		CIMR-AU5A	-0(192 – 242)	-XXX		200 – 250	600V	
Z1000	Standard	CIMR-ZU2A	-0(011 – 396)	-XXX		3 – 100	208V	
	Bypass	Z1B1D	-(002 – 169)	-PXX[3]	-TXX[5]	0.5 – 60		
		Z1C1D	-(002 – 273)	-PXXX[4]	-TXX	0.5 – 100		
	Standard	CIMR-ZU4A	-0(005 – 590)	-XXX		3 – 500	480V	
	Bypass	Z1B1B	-(001 – 180)	-PXX	-TXX	0.5 – 150		
		Z1C1B	-(001 – 240)	-PXXX	-TXX	0.5 – 200		

Notes:

1. XXX denotes Enclosure, Environmental and Revision Options
   - X-- denotes the Enclosure Type (F = with NEMA 1 guards, A = without NEMA guards)
   - -X- denotes Environmental Specs (A thru Z options possible) - No structure or components change
   - --X denotes Product Revision level (A thru Z options possible)
2. Model Number Designation can contain up to 15 characters
3. PXX denotes Power Options (Only PM, PB, PG, PMB and PMG options are permitted)
4. PXXX denotes Power Options (Only PC, PM, PF, PR, PCF, PCR, PMF and PMR options are permitted)
5. TXX denotes Control Options (Only TW, TD, TL, TWD and TWL options are permitted)

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 isolation/restraint devices, remote control panels, mounting brackets and other electrical/mechanical components.

IBC CERTIFIED THE VMC GROUP

VMA-47676-01C (Revision 7)
Issue Date: June 06, 2012
Revision Date: August 02, 2017
Expiration Date: August 31, 2020

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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 2015 – referencing ASCE7-10 and ICC AC-156
   IBC 2012 – referencing ASCE7-10 and ICC AC-156
   IBC 2009 – referencing ASCE7-05 and ICC AC-156
   IBC 2006 – referencing ASCE7-05 and ICC AC-156

3. Refer to the manufacturer supplied installation drawings for anchor requirements and mounting considerations for seismic applications. 2. Required anchor locations, size, style, and load capacities (tension and shear) are 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

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

John P. Giuliano, PE
President, The VMC Group

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