



THE VMC GROUP
The Power of Together™



CERTIFICATE OF COMPLIANCE
SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS



Certification No.

VMA-47951-01C (REVISION 4)

Expiration Date: 7/31/2019

Certification Parameters:

The nonstructural products (mechanical and/or electrical components) listed on this certificate are **CERTIFIED¹ FOR SEISMIC APPLICATIONS** in accordance with the following building code² releases.

IBC 2000, 2003, 2006, 2009, 2012

The following model designations, options, and accessories are included in this certification. Reference report number **VMA-47951-01** as issued by The VMC Group for a complete list of certified models, included accessories/options, and certified installation methods.

Data Aire Chilled Water CRAC Units

The above referenced equipment is **APPROVED** for seismic application when properly installed³, used as intended, and contains a Seismic Certification Label referencing this Certificate of Compliance⁴. 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 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 $I_p \leq 1.5$ Soil Classes A-E Risk Categories I-IV Design Categories A-F	$S_{DS} \leq 1.650 \text{ g}$	
		$z/h = 0.0$	
		Horizontal Design⁵	$\frac{F_p}{W_p} = 0.4 S_{DS} I_p \frac{a_p}{R_p} \left(1 + 2 \frac{z}{h}\right) \leq 2.970 \text{ g}$
Test Datum AC156	ISO 17025 Laboratory Pre/Post-Shake Functionality Tri-axial, 5% Damping SRS	$A_{FLEX-H} \leq 2.640 \text{ g}$	$A_{FLEX-V} \leq 1.100 \text{ g}$
		$A_{RIG-H} \leq 1.980 \text{ g}$	$A_{RIG-V} \leq 0.440 \text{ g}$
		$ZPA_H \leq 1.782 \text{ g}$	$ZPA_V \leq 0.396 \text{ g}$

Certified Seismic Installation Methods

Directly to seismic floorstand with external isolation



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Certified Product Table:

Model	Capacity (Btu/hr)	Operating Weight (lbs)	Length (in)	Width (in)	Height (in)	Mounting Method	Humidifier	Condensate Pump	Smoke Detector	Temperature & Humidity Sensors
							(optional)	(optional)	(optional)	(optional)
Manufacturer										
GFCD/U-007	20,700 – 37,500	530	36	40.5	78	Attached to gForce seismic base on The VMC Group MBX3-350 isolators	Nortec	Becket	System Sensor	Carel
GFCD/U-011	28,000 – 51,500	530	36	40.5	78					
GFCD/U-014	39,500 – 71,500	545	36	40.5	78					
GFCD/U-018	48,500 – 84,900	570	36	40.5	78					
GFCD/U-025	64,8900 – 108,400	760	48	40.5	78					
GFCD/U-032	81,300 – 137,200	785	48	40.5	78					
GFCD/U-039	95,400 – 170,800	845	48	40.5	78					
GFCD/U-046	108,600 – 201,200	890	48	40.5	78					
GFCD/U-053	151,200 – 259,700	1005	83	40.5	78					
GFCD/U-063	190,800 – 337,000	1120	83	40.5	78					
GFCD/U-077	230,700 – 412,100	1275	83	40.5	78					
GFCD/U-091	251,900 – 450,400	1485	83	40.5	78					
GFCD/U-106	314,500 – 553,300	1960	106	40.5	78					
GFCD/U-141	361,330 – 641,620	2610	120	40.5	78/84					
GFCD/U-158	434,104 – 773,486	2820	120	40.5	78/84					
GFCD/U-176	491,600 – 874,038	3020	120	40.5	78/84					
GFCD-211	546,700 – 1,043,700	3213	120	46	99					
GFCD-260	667,000 – 1,500,000	3500	138	46	99					

This certification **includes** the chilled water units installed with the isolated floor stand. The chilled water units and included options shall be a catalogue design and factory supplied. This certification **excludes** factory supplied upflow discharge plenum, no water flow alarm, hot water reheat and steam reheat. This certification **excludes** all non-factory supplied accessories, including but not limited to isolation/restraint devices, remote control panels, pumps and other electrical/mechanical components.



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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 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
IBC 2003	-- referencing ASCE7-02 and ICC AC-156
IBC 2000	-- referencing ASCE7-98 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) are specified on the installation drawings. 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 UL or NEMA standards after a seismic event.
6. This certificate applies to units manufactured at 230 West Blueridge Avenue, Orange, CA 92865-4225
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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