



THE VMC GROUP

The Power of Together™



TERMACO

CERTIFICATE OF COMPLIANCE

SEISMIC DESIGN OF NONSTRUCTURAL COMPONENTS AND SYSTEMS



Certification No.

VMA-51165-01C (REVISION 00)

Expiration Date: 02/28/2019

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 2015

The following model designations, options, and accessories are included in this certification. Reference report number 61626-1501 as issued by Dynamic Certification Laboratories for a complete list of certified models, included accessories/options, and certified installation methods.

TERMACO TCR, Battery Cabinets

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 Dynamic Certification Laboratories under the review 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-D Risk Categories I-IV Design Categories A-F	$S_{DS} \leq 1.550 \text{ g}$	$S_{DS} \leq 1.380 \text{ g}$
		$z/h = 0.0$	$z/h \leq 1.0$
		Horizontal Design ⁵ $\frac{F_p}{W_p} = 0.4 S_{DS} I_p \frac{a_p}{R_p} \left(1 + 2 \frac{z}{h}\right) \leq 1.04 \text{ g}$	
Test Datum AC156	ISO 17025 Laboratory Pre/Post-Shake Functionality Tri-axial, 5% Damping SRS	$A_{FLEX-H} \leq 2.208 \text{ g}$	$A_{FLEX-V} \leq 1.033 \text{ g}$
		$A_{RIG-H} \leq 1.656 \text{ g}$	$A_{RIG-V} \leq 0.413 \text{ g}$
		$ZPA_H \leq 1.490 \text{ g}$	$ZPA_V \leq 0.372 \text{ g}$

Certified Seismic Installation Methods

Rigid mounting from unit base to rigid structure



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Certified Product Table:

Model	Dimensions (in)			Operating Weight (lb)
	Depth	Width	Height	
TCR-CS-410RB-S02	32.7	40.0	77.6	4,930
TCR-CS-410RB-S01	35.3	40.3	78.8	5,120

This certification **includes** the product and factory supplied accessories and options. 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 certification **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.



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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
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. When the site soil properties or final equipment installation location are not known, the soil site coefficient, F_A , defaults to the Soil Site Class D coefficient. Soil Classes A, B, C, D, Seismic Risk Category I, II, III, IV, and Seismic Design Categories A, B, C, D, E, and F are all covered under this certification, limited by the S_{DS} values on page 1, respective to the applicable building code, Importance factor, and z/h ratio.
6. 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.
7. This certificate applies to units manufactured at 325 Boul. Industriel, Saint-Jean-Sur-Richelieu, Quebec, Canada J3B 7M3

John P. Giuliano, PE
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