



IBC-2012 Seismic Rating

What's Shakin'?

What you need to know about seismic requirements and GE compliance



imagination at work

What you need to know about GE compliance with IBC-2012

- GE has established consolidated IBC-2012 seismic capable product lines
- Products were 3D shake table tested in accordance with ICC-ES-AC156
- Products are rated to perform successfully during and after seismic activity
- Developed for areas with stringent seismic requirements
- Needed in essential facilities (data centers, hospitals, etc.)

Equipment Ratings

The GE product lines listed below are certified per ASCE 7-05, ASCE 7-10, IEEE-693-2005 and IBC-2012 for the following maximum seismic parameters. Samples of the most seismically significant constructions were tested to qualify each product line.

Product Line	Std/Opt	IBC-2012				Certification Report	OSHPD Certification
		$I_p = 1.5, z/h = 1$		$I_p = 1.5, z/h = 0$			
		S_s	S_{ds}	S_s	S_{ds}		
Panelboards							
A-Series Lighting Panels ¹							
AQ, AQP & AL	Std	2.31 g	1.54 g	3.60 g	2.40 g	10095950	OSP-0040-10
AE & AEP	Std	2.31 g	1.54 g	3.60 g	2.40 g		
AD & ADP	Std	2.31 g	1.54 g	3.60 g	2.40 g		
Spectra Series Power Panelboards	Std	3.75 g	2.50 g	5.19 g	3.46 g	10095805	
Switchboards							
Spectra & Jiffy Series Switchboards ¹	Opt	2.34 g	1.56 g	3.80 g	2.53 g	10095999	OSP-0044-10
Integrated Switchboards							
Without Transformer ¹	Opt	2.34 g	1.56 g	4.35 g	2.90 g	10095999	OSP-0044-10
With Transformer	Opt	1.43 g	0.95 g	2.85 g	1.90 g		
PowerBreak II/AV3 Switchboard	Opt	2.51 g	1.67 g	4.01 g	2.67 g	10096054	OSP-0043-10
Switchgear							
AKD-10, Entellisys LV Switchgear ¹	Opt	2.37 g	1.58 g	3.80 g	2.53 g	10095954	OSP-0043-10
AKD-20, Entellisys LV Switchgear ¹	Opt	3.47 g	2.31 g	4.52 g	3.01 g		
AKD-20 AR, Entellisys AR LV Switchgear ¹	Opt	3.47 g	2.31 g	4.52 g	3.01 g		
Entellisys Remote Control Stack	Opt	2.51 g	1.67 g	4.01 g	2.67 g	10095844	
PowerVac MV Switchgear	Opt	2.84 g	1.89 g	4.55 g	3.03 g	10095952	OSP-0103-10
Motor Control Center							
Evolution LV Motor Control Center ¹	Std	2.69 g	1.79 g	3.98 g	2.65 g	10095801	OSP-0093-10
LimitAmp MV Motor Control Center	Opt	2.76 g	1.84 g	3.38 g	2.25 g	10095800	OSP-0106-10
BreakMaster Load Interrupter Switch	Opt	3.62 g	2.41 g	5.79 g	3.86 g	10095791	OSP-0042-10
Enclosed Drives	Std	3.02 g	2.01 g	5.40 g	3.60 g	10095809	—
Enclosed Controls	Std	3.50 g	2.33 g	5.60 g	3.73 g		OSP-0309-10
Safety Switches ¹	Std	1.82 g	1.21 g	2.91 g	1.94 g		OSP-0320-10
Spectra Series Busway ¹	Std	1.67 g	1.11 g	1.67 g	1.11 g	10095806	OSP-0314-10
Transformers (LV)							
TransforMore & QL							
Floor Mounted	Std	3.29 g	2.19 g	4.83 g	3.22 g	10095845	OSP-0041-10
Wall Mounted ¹	Std	1.74 g	1.16 g	2.79 g	1.86 g		
MQMS, IP & QB ¹	Std	2.87 g	1.91 g	4.59 g	3.06 g		

¹ Minimum S_{ds} values have been provided. See certification letter for criteria for higher S_{ds} values.

Test Criteria

IBC-2012 Test Criteria

- I_p** Equipment importance factor in accordance with Section 11.5.1 of ASCE 7 (from 1.0 to 1.5). All GE equipment with IBC-2009 certification is qualified to an I_p level of 1.5, indicating the equipment will be fully functional during and after a seismic event.
- z/h** The ratio of equipment mounting height (z) to roof height (h) (From 0 to 1). Ground and roof mounted equipment, for example, would have z/h levels of 0 and 1, respectively.
- S_s** Mapped maximum considered earthquake response at short periods [%g]. Values are assigned based upon geographic location, probability, and severity of seismic activity; provided on maps in IBC-2012. (From 0% to 300%).
- S_{ds}** Five-percent damped design spectral response acceleration at short periods. Adjusted value based upon S_s and installation site characteristics. (From 0.0 to 2.0) $S_{ds} = 2/3 * F_a * S_s$ (where $0.8 < F_a < 1$).

IBC seismic testing qualified each product line to specific S_{ds} levels for ground- and roof-level installation. Equipment S_{ds} levels must equal or exceed the S_{ds} levels of the installation location.

Certification

Seismic certification and analytical work was performed by FORELL/ELSESSER ENGINEERS, INC. Registered Professional Engineer, Structural, California license #S4454 & "W. E. Gundy & Associates, Inc., Registered Professional Engineers," William E. Gundy, Registered Professional Engineer, California license #CE-26539. As shown, a typical report includes verification of test results as well as qualification to IBC-2012 and IEEE-693-2005 standards.



Information provided is subject to change without notice. Please verify all details with GE. All values are design or typical values when measured under laboratory conditions, and GE makes no warranty or guarantee, express or implied, that such performance will be obtained under end-use conditions.

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