IBC SEISMIC RATINGS

What's Shakin'?

Seismic requirements and ABB compliance

- ABB has established consolidated IBC-2021 or prior seismic capable product lines
- Products were 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 product lines listed below are certified per ASCE 7-22 or prior, IEEE 693-2005 or 2018 and IBC-2021 or prior for the following maximum seismic parameters. Samples of the most seismically significant constructions were tested to qualify each product line. For HCAi OSP (formerly known as OSHPD) requests, contact a local ABB sales representative.

Product line	Std/Opt	IBC-2018 (unless otherwise noted)				Certification report
		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 and ReliaGear lighting panels[1]						
AQ, AL, RQ and RL	Std	2.84 g	2.00 g	3.60 g	2.50 g	
AE, AS, RE and RS	Std	2.84 g	2.00 g	3.60 g	2.50 g	10095950
AD and RD	Std	2.84 g	2.00 g	3.60 g	2.50 g	
Spectra series power panelboards	Std	3.75 g	2.50 g	5.19 g	3.46 g	10095805
ReliaGear neXT	Std		2.0 g		2.50 g	1900462
Switchboards						
Spectra and Jiffy series switchboards[1]	Opt	2.34 g	1.56 g	3.80 g	2.53 g	10095999
Integrated switchboards						
Without	Opt	2.34 g	1.56 g	4.35 g	2.90 g	10095999
With transformer	Opt	1.43 g	0.95 g	2.85 g	1.90 g	
ReliaGear SB	Opt		2.00 g		2.50 g	15605 Rev. 1

Product line	Std/Opt	IBC-2018 (unless otherwise noted)				Certification report
		I_p = 1.5, z/h = 1		I_p = 1.5, z/h = 0		
		S_s	S_{ds}	S_s	S_{ds}	
Switchgear						
Advance[3]	Std	3.0 g	2.0 g		2.5 g	1089-360 HCAI/OSHPD: OSP-0825
Advance 27[3]	Std	3.0 g	2.0 g		2.5 g	1089-360 HCAI/OSHPD: OSP-0825
Advance 38[5]			See footnote			
SafeGear[3]	Std	3.0 g	2.0 g		2.5 g	1089-360 HCAI/OSHPD: OSP-0825
SafeGear HD[3]	Opt	3.75 g	2.5 g			1089192-R5
ReliaGear SG	Opt		2.0 g		2.5 g	0001292633 HCAI/OSHPD: OSP-0782
MNS SG AR	Opt		1.48 g		2.37 g	1089151
Motor control centers						
ReliaGear MCC [3]	Opt		2.0 g		2.5 g	1089-316 HCAI/OSHPD: OSP-0093[4]
SafeGear MCC[2]			See footnote			
MNS MCC AR	Std		1.48 g		2.37 g	1089151
BreakMaster load interrupter switch	Std	3.0 g	2.0 g		2.5 g	1089-388 HCAI/OSHPD: OSP-0042
BreakMaster 38 and BreakMaster 38 V[6]			See footnote			
Enclosed drives	Std	3.02 g	2.01 g	5.40 g	3.60 g	
Enclosed controls	Std	3.50 g	2.33 g	5.60 g	3.73 g	10095809
Safety switches[1]	Std	1.82 g	1.21 g	2.91 g	1.94 g	
ReliaGear busway (certified to IBC-2015)	Std	1.67 g	1.11 g	1.67 g	1.11 g	10095806

1 Minimum Sds values have been provided. See certification letter for criteria for higher Sds values
2 SafeGear MCC has been certified to Ip = 1.0, z/h = 1
3 Tested and certified in accordance with IBC 2021 / CBC 2022
4 ReliaGear LV MCC HCAI Certification excludes PBII, PFC, and Load Filters above 250A
5 Advance 38 has been certified to Ip=1.0 , Sds = 2.0, z/h = 0
6 BreakMaster 38 and 38 V have been certified to Ip=1.0 , Sds = 1.0g, z/h = 1

IBC-2021 or prior

- I_p: Equipment importance factor in accordance with Section 11.5.1 of ASCE 7 (from 1.0 to 1.5). All ABB equipment with IBC certification is qualified to an Ip 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 Ss and installation site characteristics. (From 0.0 to 2.0) Sds =2/3 * Fa * Ss (where 0.8 < Fa < 1).

IBC seismic testing qualified each product line to specific Sds levels for ground- and roof-level installation. Equipment Sds levels must equal or exceed the Sds 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 and "W. E. Gundy and Associates, Inc., Registered Professional Engineers," Travis Soppe, Registered Professional Engineer, California license #S6115. As shown, a typical report includes verification of test results, as well as qualification to relative IBC and IEEE 693 standards.

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