



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY	
APPLICATION #:	OSP – 0419 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Motion Control Engineering

Manufacturer's Technical Representative: Debbie Prince, Code Specialist

Mailing Address: 11380 White Rock Road, Rancho Cordova, CA 95742

Telephone: (916) 463-9298 Email: Debbie.Prince@nidec-mce.com

Product Information

Product Name: Elevator control panels

Product Type: Control panels

Product Model Number: HMC-2000, mGROUP, M4000-AC-01, i-AC-01, i-DC-01, i-CENTRAL-CUE, RESIST-R-C, and Filter cabinets

(List all unique product identification numbers and/or part numbers)

General Description: Painted carbon steel or aluminum enclosures, NEMA 1, containing various subcomponents as described in the attachment. Seismic enhancements made to the test units and required to address the anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Control panels were tested various mounting configurations: rigid wall mounted, flexible wall mounted, rigid base mounted or flexible base mounted, as shown in the attachment.

Applicant Information

Applicant Company Name: Dynamic Certification Laboratories

Contact Person: Joseph L. La Brie, S.E., Managing Partner

Mailing Address: 1315 Greg Street, Suite 109

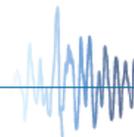
Telephone: (775) 358-5085 Email: labrie@shaketest.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant:  Date: 5-20-15

Title: Managing Partner Company Name: Dynamic Certification Laboratories

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: Dynamic Certification Laboratories

Name: Dr. Ahmad Itani, S.E. California License Number: SE-5220

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: itani@shaketest.com

Supports and Attachments Preapproval

- Supports and attachments are preapproved under OPM- _____
(Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
- Supports and attachments are not preapproved

Certification Method

- Testing in accordance with: ICC-ES AC156
- Other (Please Specify): _____

Testing Laboratory

Company Name: Dynamic Certification Laboratories

Contact Name: Kelly Laplace, Project Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431

Telephone: (775) 358-5085 Email: kelly@shaketest.com





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: [X] Yes [] No

Design Basis of Equipment or Components (Fp/Wp) = 1.58 (SDS 2.1 g); 1.88 (SDS 2.5 g);

SDS (Design spectral response acceleration at short period, g) = 2.1 g (M4000-AC-01, i-AC-01, i-CENTRAL-CUE)
2.5 g (all other units)

ap (In-structure equipment or component amplification factor) = 2.5

Rp (Equipment or component response modification factor) = 6.0

Omega_0 (System overstrength factor) = 2.5

Ip (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See attachment

Overall dimensions and weight (or range thereof) = See attachment

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: [] Yes [X] No

Design Basis of Equipment or Components (V/W) =

SDS (Design spectral response acceleration at short period, g) =

SD1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Omega_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component Natural Frequencies (Hz) =

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2010: [] Yes [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [X] Drawings [] Calculations [] Manufacturer's Catalog

[] Other(s) (Please Specify):

OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2019

Signature: [Handwritten Signature] Date: 6/3/2015

Print Name: M. R. Karim Title: SHFR

Special Seismic Certification Valid Up to : SDS (g) = See Above z/h = 1.0

Condition of Approval (if applicable):



Special Seismic Certification Certified Components

Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Certified Product Construction: NEMA 1 enclosures; painted carbon steel or aluminum

Certified Options: Solid state starters, battery rescue devices, capacitors, contactors, drives, fans, filters and chokes, p.c. boards, peripherals, power modules, power supplies, receptacles, relays, resistors and transformers

Certified Mounting Description: Rigid or flexible wall (HMC-2000 and mGroup), rigid wall (RESIST-R-C), or rigid base mounted (all other models)

Model	Description	Enclosure Material	NEMA Rating	Maximum Dimensions (inches)			Max. Weight (lb)	Mounting	Sds (g), z/h=1	Unit
				Depth	Width	Height				
HMC-2000	Size 1	Painted carbon steel	1	12.0	36.0	42.0	250	Rigid or flexible wall	2.50	UUT3a,b
HMC-2000	Size 2	Painted carbon steel	1	12.0	48.0	36.0	318	Rigid or flexible wall	2.50	UUT1a,b
M4000-AC-01	Size 1	Painted carbon steel	1	16.0	42.0	72.0	481	Rigid base	2.10	UUT5
M4000-AC-01	Size 2	Painted carbon steel	1	17.0	61.0*	72.0	960	Rigid base	2.10	UUT6
mGROUP	One Size	Painted carbon steel	1	6.0	18.0	44.0	100	Rigid or flexible wall	2.50	UUT2a,b, UUT4a,b
i-AC-01	Size 1	Painted carbon steel	1	16.0	42.0	72.0	560	Rigid base	2.10	UUT7
i-AC-01	Size 2	Painted carbon steel	1	17.0	61.0*	72.0	1,050	Rigid base	2.10	UUT8
i-DC-01	One Size	Painted carbon steel	1	16.0	42.0	72.0	540	Rigid base	2.50	UUT9
i-DC-01	One Size	Painted carbon steel	1	16.0	42.0	72.0	550	Rigid base	2.50	UUT10
i-CENTRAL-CUE	One Size	Painted carbon steel	1	23.0	28.0	72.0	402	Rigid base	2.10	UUT11, UUT12
Filter	One Size	Painted carbon steel	1	14.3	30.0	25.8	166	Rigid base	2.50	UUT13, UUT14
RESIST-R-C	Size 1	Aluminum	1	10.3	18.0	32.0	40	Rigid floor or wall mount	2.50	UUT15a,b
RESIST-R-C	Size 2	Aluminum	1	10.0	20.8	32.0	51	Rigid floor or wall mount	2.50	UUT16a,b

*Note: UUT6 and UUT8 cabinet width is 61.0" with optional side enclosure, and 46.0" without.

Special Seismic Certification Certified Subcomponents



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Enclosures

Enclosures								
Model Number	MCE Part #	Manufacturer	Material	Dimensions (inches)			NEMA Type	Unit
				Depth	Width	Height		
15-10-0022	15-10-0022	MCE	Painted carbon steel	6.0	18.0	44.0	1	UUT2a,b, UUT4a,b
15-02-0012	15-02-0012	MCE	Painted carbon steel	13.0	13.0	39.0	1	UUT6, UUT8*
115RS REV B	15-02-0027-ID-D	Hoffman	Painted carbon steel	12.0	36.0	42.0	1	UUT3a,b
322RH-TAN	15-02-0027	Hoffman	Painted carbon steel	12.0	48.0	36.0	1	UUT1a,b
15-50-0002	15-50-0002	Hoffman	Painted carbon steel	16.0	42.0	72.0	1	UUT5, UUT7, UUT9, UUT10
15-50-0001	15-50-0001	Hoffman	Painted carbon steel	17.0	46.0	72.0	1	UUT6, UUT8*
312RH-TAN	15-09-0050	Hoffman	Painted carbon steel	14.0	26.0	26.0	1	UUT13, UUT14
15-02-0044	15-02-0044	Micrometl	Painted carbon steel	16.0	42.0	72.0	1	UUT9, UUT10
15-03-0008	15-03-0008	MCE	Painted carbon steel	23.0	28.0	72.0	1	UUT11, UUT12
PRO 1281	31-RA-0005	Milwaukee	Aluminum	21.0	32.0	10.0	1	UUT16a,b
49-0009.800-08-P1279	31-RA-0008	Milwaukee	Aluminum	18.0	32.0	10.0	1	UUT15a,b

*Note: UUT6 and UUT8 were tested with main enclosure, Model 15-50-0001, and side enclosure, Model 15-02-0012.

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Solid state starters

Solid State Starters				
Model Number	Manufacturer	Material	Power	Unit
72EG34AFP	Siemens	Solid state components in plastic housing	208-480VAC; 5-125 HP; 22-252 FLA	UUT3a,b
72GG34AFP				Interpolated
72HG34AFP				Interpolated
72JG34AFP				Interpolated
72KG34AFP				Interpolated
72LG34AFP				Interpolated
72MG34AFP				Interpolated
72NG34AFP				Interpolated
72PG34AFP				Interpolated
72RG32AFP				UUT1a,b

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Battery rescue devices

Battery Rescue Devices

Model Number	Manufacturer	Material	Description	Unit
HAPS-2B-208V	MCE	Circuit board assembly	Battery lowering unit, 2 batteries, 208VAC	UUT1a,b
HAPS-2B-220V			Battery lowering unit, 2 batteries, 220VAC	Interpolated
HAPS-2B-240V			Battery lowering unit, 2 batteries, 240VAC	Interpolated
HAPS-2B-480V			Battery lowering unit, 2 batteries, 480VAC	Interpolated
HAPS-4B-208V			Battery lowering unit, 4 batteries, 208VAC	Interpolated
HAPS-4B-220V			Battery lowering unit, 4 batteries, 220VAC	Interpolated
HAPS-4B-240V			Battery lowering unit, 4 batteries, 240VAC	Interpolated
HAPS-4B-480V			Battery lowering unit, 4 batteries, 480VAC	UUT3a,b

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Capacitors

Capacitors

Model Number	Manufacturer	Material	Electrical Ratings	Unit
940C10W1K-F	CDE	Case Material: UL510 Polyester Tape Wrap; Resin Material: UL94V-0 Epoxy Fill; Terminal Material: Tin Plated Copper	1uF, 500VAC/1000VDC	UUT6, UUT7, UUT8
E81D630VNN682MA50T	UCC	Aluminum	6800uF, 63V	UUT5, UUT6, UUT7, UUT8, UUT9, UUT10, UUT11, UUT12
97F5704	Genteq	Metalized polypropylene film	4uF, 370VAC	UUT9
97F5300BX	Genteq	Metalized polypropylene film	10uF, 440VAC	UUT5, UUT6
97F9622	Genteq	Metalized polypropylene film	50uF, 370VAC	UUT7, UUT8, UUT9
97F5320BX	Genteq	Metalized polypropylene film	50uF, 440VAC	UUT10

Special Seismic Certification Certified Subcomponents



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Contactors

Contactors				
Model Number	Manufacturer	Material	Power	Unit
3RT1026-1AK60	Siemens	Housing material: Plastic; Contact material: AgSnO	7.5/15HP; 25A	UUT5, UUT7, UUT8
3RT1033-1AK60			10/20HP; 28A	Interpolated
3RT1034-1AK60			10/25HP; 32A	Interpolated
3RT1035-1AK60			15/30HP; 40A	UUT5, UUT6
3RT1036-1AK60			15/40HP; 50A	UUT9
3RT1044-1AK60			25/50HP; 65A	Interpolated
3RT1045-1AK60			30/60HP; 80A	Interpolated
3RT1046-1AK60			30/75HP; 95A	UUT10
3RT1054-6AF36			50/100HP; 115A	Interpolated
3RT1055-6AF36			60/125HP; 150A	Interpolated
3RT1056-6AF36			60/125HP; 185A	Interpolated
3RT1064-6AF36			75/150HP; 225A	Interpolated
3RT1065-6AF36			100/200HP; 265A	Interpolated
3RT1066-6AF36			125/250HP; 300A	UUT6, UUT8

Special Seismic Certification Certified Subcomponents



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Drives

Drives					
Model Number	Manufacturer	Material	Description	Power	Unit
13.F5.A1E-PP00	KEBCO	Circuit boards, solid state devices and terminal blocks in plastic housing	TORQMAX F5 Inverter Drives	180-260VAC; 7.5-60 HP; 22-154 FLA	UUT5, UUT7
14.F5.A1E-PP00					Interpolated
15.F5.A1G-PP00					Interpolated
15.F5.A1G-PP0A					Interpolated
15.F5.A1H-PP00					Interpolated
16.F5.A1H-PP00					Interpolated
17.F5.A1H-PP00					Interpolated
17.F5.A1H-PP0A					Interpolated
19.F5.A1R-PP00					Interpolated
19.F5.A1R-PP0A					Interpolated
20.F5.A1R-PP00					Interpolated
21.F5.A1R-PP00					UUT6, UUT8
13.F5.A1E-RP00	KEBCO	Circuit boards, solid state devices and terminal blocks in plastic housing	TORQMAX F5 Inverter Drives	305-500VAC; 7.5-175 HP; 11-231 FLA	UUT5, UUT7
14.F5.A1E-RP00					Interpolated
15.F5.A1E-RP00					Interpolated
16.F5.A1G-RP00					Interpolated
17.F5.A1G-RP00					Interpolated
18.F5.A1H-RP00					Interpolated
19.F5.A1H-RP00					Interpolated
20.F5.A1H-RP00					Interpolated
21.F5.A1R-RP00					Interpolated
22.F5.A1R-RP00					Interpolated
22.F5.A1R-RP0A					Interpolated
24.F5.A1U-RP00					Interpolated
26.F5.A1U-RP00	UUT6, UUT8				
19.R6.S3E-RP00	KEBCO	Circuit boards, solid state devices and terminal blocks in plastic housing	R6 Regen Unit	180-500VAC; 65-195A	UUT5-8
DSL18-S	MCE	Circuit boards, solid state devices and terminal blocks in plastic housing	SCR Drive	Rated inputs: 120-240V ac, 6 phase, 50/60 Hz Rated output: 0-240V dc, 0-180A dc	UUT9
DSH18-S	MCE		SCR Drive	Rated inputs: 240-600V ac, 6 phase, 50/60 Hz Rated output: 0-500V dc, 0-180A dc	UUT10

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Fans

Fans

Model Number	Manufacturer	Material	Electrical Ratings	Unit
SP100A-1123XBT.GN	Sunon	Aluminum alloy	115V, 60 Hz, 12W	UUT6-8, UUT13-14
A1175-HBT-TC.GN	Sunon	Aluminum alloy	115V, 60 Hz, 33W	UUT5-6, UUT11-12

Special Seismic Certification Certified Subcomponents



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Filters and Chokes

Filters & Chokes

Model Number	Manufacturer	Material	Description	Electrical Ratings	Unit
19.Z1.B05-1000	KEBCO	Carbon steel housing	Commutation choke	550VAC, 70A (max)	UUT5-8
2-30-2173F-CHINA	MCI	Core: Ferrite; Windings: Copper; Terminals: Extruded brass UL Listed terminal attached to G10 terminal board using brass hardware (bolts, nuts, washers); Capacitors: Cornel Dublier #940C12W1K-F attached to assembly using Panduit cable tie and capacitor saddles.	EMI filter assembly	70A	UUT5, UUT7
2-30-2135		Core: Ferrite; Windings: Copper; Terminals: Copper buss bar		140A	UUT6, UUT8
2-30-2052	MCI	Core: Electrical grade steel laminate; Windings: Copper; Terminals: Copper buss bar;	Inductor for DC filter	110A, 240V, 0.75mH	UUT13
2-30-2036				190A, 240V, 0.75mH	Interpolated
2-30-2048				255A, 240V, 0.75mH	Interpolated
2-30-2047				340A, 240V, 0.75mH	Interpolated
2-30-2053				110A, 500V, 0.75mH	Interpolated
2-30-2035				190A, 500V, 0.75mH	UUT14
RL-01802	MTE	Core Steel: Electrical grade high frequency silicon steel Windings: High dielectric withstand solid copper conductor (220° C)	Line inductor	18A, 1.5mH	UUT5, UUT7
RL-02502				25A, 1.2mH	Interpolated
RL-03502				35A, 0.8mH	Interpolated
RL-04502				45A, 0.7mH	Interpolated
RL-08002				80A, 0.4mH	Interpolated
RL-10002				100A, 0.3mH	Interpolated
RL-13002				130A, 0.2mH	Interpolated
RL-16002				160A, 0.15mH	Interpolated
RL-20002B14				200A, 0.11mH	UUT6, UUT8

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Printed circuit boards

Printed Circuit Boards			
Model Number	Manufacturer	Material	Unit
CE2849F with M00393 Piggyback board	MCE	Printed wiring board	UUT1a,b, UUT3a,b, UUT5-6
HC-CHP			UUT1a,b, UUT3a,b, UUT5-6
HC-CTL			UUT1a,b, UUT3a,b, UUT5-6
HC-DAB			UUT1a,b, UUT3a,b, UUT5-6
HC-DB-MOD			UUT1a,b, UUT3a,b, UUT5-6
HC-DB-MOD-R			UUT1a,b, UUT3a,b, UUT5-6
HC-DVR			UUT1a,b, UUT3a,b
HC-GB-4			UUT1a,b, UUT3a,b, UUT5-6
HC-MPU			UUT1a,b, UUT3a,b, UUT5-6
HC-OA			UUT7-10
HC-RDR			UUT1a,b, UUT3a,b, UUT5-6
HC-RT20			UUT1a,b, UUT3a,b, UUT5-6
HC-UIO			UUT1a,b, UUT3a,b, UUT5-6
ICE-FB1P			UUT7-10
ICE-FB2P			UUT7-10
ICE-FB4			UUT7-12
ICE-IEQ			UUT7-10
ICE-IMP			UUT7-10
ICE-IRB-2			UUT7-10
ICE-IRD			UUT7-10
ICE-MIAC			UUT7-10
ICE-MOR			UUT7-10
ICE-PFD			UUT7-10
ICE-PRB			UUT7-10
ICE-RG			UUT7-10
ICE-SAF			UUT7-10
ICE-SF			UUT7-10
MC-MCP			UUT2a,b, UUT4a,b
SC-HCDA			UUT9-12
SC-HCE-2			UUT11-12
SC-ION	UUT9-12		
TC-MPI	UUT5-6		

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Computers and peripherals

Computers & Peripherals

Model Number	Manufacturer	Material	Description	Electrical Ratings	Unit
UM.BV6AA.002	Acer	Plastic	Monitor 17" Black LCD	Input Voltage: 110 / 220 VAC Operating Power Consumption: 13 W	UUT12
UM.CV6AA.001	Acer	Plastic	Monitor 19" Black LCD Wide Screen	Input Voltage: 110 / 220 VAC Operating Power Consumption: 13 W	UUT11
920002478	Logitech	Plastic	Keyboard USB Internet Black	5V; 100mA	UUT11-12
1240900000	Weidmuller	Housing main material: aluminium	8 port ethernet switch	N/A	UUT11-12
OPTIPLEX 3020MT CTO (210-ABIW)	Dell	PC Housing main material: painted carbon steel; mouse: plastic	DELL Optiplex 3020 P.C. w/WIN 7 64BIT	Computer: 100-240V, 5.4A, 50-60 Hz Mouse: 5V; 100mA	UUT11-12
UR-12-PLUS	Connectpro	Housing main material: painted carbon steel	KVM switch, 2 PORT USB	5VDC	UUT11-12

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Power modules

Power Modules

Model Number	Manufacturer	Material	Power	Unit
i-Box-1	MCE	Circuit boards, solid state devices and terminal blocks, in plastic housing	120VAC / 110VDC	UUT7-10
I-PowerBox-2	MCE		600V, 30A	UUT7-8
I-PowerBox-3	MCE		600V, 30A	UUT9-10
HAPS	MCE	Circuit boards; solid state devices; terminal blocks; 12V, 5AH batteries; etc., in open housing	100-240 VAC / 24 VDC	UUT1a,b, UUT3a,b

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Power supplies

Power Supplies

Model Number	Manufacturer	Material	Power	Unit
DSP 100-24	Lamda	Plastic housing	<u>Input:</u> 100VAC-240VAC <u>Output:</u> 24V	UUT2a,b, UUT4a,b, UUT5-9
LFWLT40-3002-A	EOS	PC board, open	<u>Input:</u> 90 - 264 V, Universal <u>Output:</u> 5.2V, 14.6V, 14.8V	UUT7-10
8951360000	Weidmuller	Metal housing	<u>Input:</u> 100-240 V AC <u>Output:</u> 22.5-29.5 V	UUT11-12

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Receptacles and power strips

Receptacles & Power Strips

Model Number	Manufacturer	Material	Description	Power	Unit
5325W	Leviton	Thermoplastic	Duplex receptacle, 15A 125V	15A, 125V	UUT11-12
PS2408	Tripplite	Aluminum	Power strip, 15A 120v AC	15A, 120V	UUT11-12

Special Seismic Certification Certified Subcomponents



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Relays and relay sockets, surge protectors, timers and terminal blocks

Relays & Relay Sockets, Surge Protectors, Timers and Terminal Blocks

Model Number	Manufacturer	Material	Description	Power	Unit
KUP-14A15-120	Potter & Brumfield	Contact material: silver alloy Case: plastic	Relay	120VAC coil, 10A contacts	UUT5-6, UUT9-10
PRD-11AY0-120	Potter & Brumfield	Contact material: silver Case: plastic	Relay	120VAC coil; 25A, 240VAC contacts	UUT7-8, UUT11-12
PRD-11AH0-120V	Potter & Brumfield		Relay	120VAC coil; 20A, 125VDC contacts	UUT1a,b, UUT3a,b, UUT5-6
MY4-DC24(S)	Omron	Contact material: silver Case: plastic	Relay	24VDC coil, 3A contacts	UUT7-12
MY4N-AC110/120(S)	Omron		Relay	120VAC coil, 5A	UUT1-12
PYF14A-C	Omron	Case: plastic	Relay terminal	Used for relays with up to 120VAC coils, 5A contacts	UUT1-12
438A-115-1	Artisan	Contact material: silver alloy Case: plastic	Timer	115VAC, 1A	UUT7-8
438-USA	Artisan	Contact material: silver alloy Case: plastic	Timer	19 - 288 VAC/DC; 1A	UUT7-10
70-463-1	Magnecraft	Internal metal tracks: copper alloy, zinc plated; Screw terminals: zinc plated carbon steel; Body: thermoplastic UL 94VO	Relay terminal	15A, 300V	UUT5-6, UUT9-10
BSPM3480WYGR	Cooper-Bussmann	Enclosure material: thermoplastic UL 94VO	Surge Protector	227/480VAC	UUT4
BSPM3208WYGR	Cooper-Bussmann	Enclosure material: thermoplastic UL 94VO	Surge Protector	120/208VAC 3	UUT5
RL4RA031TJ	G.E.	Contact material: silver alloy Case: plastic	Auxiliary contactors	120VAC coil, 10A	UUT1-3, UUT5-6
1322572	Marathon	Copper and aluminum box lug	Terminal block	175A	UUT15a, UUT15b, UUT16a, UUT16b

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Resistors

Resistors					
Model Number	Manufacturer	Material	Description	Power	Unit
AVT025-XX	Vishay	Element: copper-nickel alloy or nickel-chrome alloy, depending on resistance value Core: ceramic, steatite or cordierite	Wirewound resistors, industrial power, adjustable tubular	25W	UUT1a,b, UUT3a,b, UUT5 10
AVT050-XX				50W	Interpolated
AVT100-XX				100W	Interpolated
AVT200-XX				225W	UUT1a,b, UUT3a,b, UUT5 10
FVT025-XX			Wirewound resistors, industrial power, fixed tubular	25W	UUT1a,b, UUT3a,b, UUT5 10
FVT050-XX				50W	Interpolated
FVT100-XX				100W	Interpolated
FVT200-XX				225W	UUT1a,b, UUT3a,b, UUT5 10
40-240-30ARCXBKRT		Resistance-alloy ribbon wire is coiled on edge and supported on specially designed porcelain insulators	Wirewound resistors, industrial power, tubular, ribwound (RB), adjustable, 1000W 30 OHM	1000W	UUT5-8
40-320-3RC		Element: copper-nickel, nickel-chrome, iron-chrome- aluminum; Core: cordierite, steatite; Coating: special high temperature silicone or vitreous enamel; Terminals: nickel-iron	Wirewound resistors, industrial power, tubular, ribwound (RB), fixed	1500W	UUT5-8
40-320-8RCX				1500W	UUT5-8
51-007.8-2-8313				1100W	Extrapolated
51-012.6-2-8313				1100W	UUT5, UUT7
51-015.6-2-8313				1100W	Interpolated
51-020.0-2-8313				1100W	Interpolated
51-025.0-2-8313				1100W	Interpolated
51-030.0-2-8313				1100W	Interpolated
51-031.8-2-8313				1100W	Interpolated
51-036.0-2-8313	1100W			UUT6, UUT8	
51-045.6-2-8313	1100W			Interpolated	
51-075.0-2-8313	1100W			Interpolated	
51-120.0-2-8313	1100W			Interpolated	
52-320-10.7RC	2000W			Interpolated	

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Resistors (continued)

Resistors (Continued)					
Model Number	Manufacturer	Material	Description	Power	Unit
M-214745	Vishay	Element: stainless steel, copper-nickel, nickel-chrome; Core: electrical porcelain; Terminals: Stainless steel	Edgewound Power Resistors	1000W	Interpolated
M-214749				1000W	Interpolated
M-214751				1000W	Interpolated
M-214757				1000W	Interpolated
M-214758				1000W	Interpolated
M-214762				1000W	Interpolated
M-214765				1000W	Interpolated
M-214766				1000W	Interpolated
M-214790				1200W	Interpolated
M-214791				1100W	Interpolated
M-214824				1400W	Interpolated
M-214833				1400W	Interpolated
M-214835				1400W	Interpolated
M-214837				1400W	Interpolated
M-214858				1600W	Interpolated
M-214865				1600W	Interpolated
M-214867				1600W	Interpolated
M-214869				1600W	Interpolated
M-214870				1600W	Interpolated
M-214871				1600W	Interpolated
M-214872				1600W	Interpolated
M-214873				1600W	Interpolated
M-214874				1600W	Interpolated
M-214875				1600W	Interpolated
M-214877				1600W	Interpolated
M-214878				1600W	Interpolated
M-214879				1600W	UUT5, UUT7
M-214880				1600W	Interpolated
M-214881				1600W	UUT16a, UUT16b
M-214882				1600W	Interpolated
M-214883				1600W	Interpolated
M-214884				1600W	Interpolated
M-214885	1600W	UUT15a, UUT15b			
M-214886	1600W	UUT6, UUT8			

**Special Seismic Certification
Certified Subcomponents**



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Resistors (continued)

Resistors (Continued)					
Model Number	Manufacturer	Material	Description	Power	Unit
FSE1000-10 OHM	Vishay	Element: copper-nickel, nickel-chrome, iron-chrome-aluminum; Core: cordierite, steatite; Coating: special high temperature silicone or vitreous enamel; Terminals: nickel-iron	Wirewound Resistors, Industrial Power, Silicone Coated, Fixed Edgewound Tubular	1000W	UUT5-8
PFE5K1R00E	Ohmite	Heavy resistance alloy mounted on ceramic insulators	Wirewound Resistors	1000W	UUT5-8
PFE5KR100	Ohmite		Wirewound Resistors	1000W	UUT5-8
PRM-214739	Powerohm	Resistance-alloy ribbon wire is coiled on edge and supported on specially designed porcelain insulators	Power Resistor	1000W	UUT5-8

Special Seismic Certification Certified Subcomponents



Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Subcomponent: Transformers

Transformers

Model Number	Manufacturer	Core Material	Winding Material	Capacity (VA)	Voltages (VAC)	Unit
4-06-5024	MCI	Carbon steel	Copper	12	12/24	UUT1a,b, UUT5-6
4-06-6036				30	18/36	UUT11-12
4-06-6016				30	16	UUT5-6, UUT11-12
4-49-6016				80	115/230-8/16	UUT1a,b, UUT3a,b, UUT5-6, UUT11-12
4-06-8024				100	12/24	UUT5-6, UUT11-12
4-06-8020				100	20	UUT5-6
4-49-8036				175	115, 36/18	UUT7-10
4-54-0540				650	110, 120, 160, 220, 240, 16, 24	UUT1a,b, UUT5-10
4-54-0740				900	110, 120, 160, 220, 240, 16, 24	Interpolated
4-54-1040				1150	110, 120, 160, 220, 240, 16, 24	UUT5-10
4-54-1540				1650	110, 120, 160, 220, 240, 16, 24	UUT5-6
4-54-2040				2150	110, 120, 160, 220, 240, 16, 24	UUT3a,b, UUT7-8
TCT40-01E07AB-B				Triad	Carbon steel	Copper
A41-80-28-CSA	SIGNAL	Carbon steel	Copper	80	115 /230, 14/28	UUT5-6

Special Seismic Certification



Tested Components

Manufacturer: Motion Control Engineering

Product Line: Elevator control panels

Tested Product Construction: NEMA 1 enclosures; painted carbon steel or aluminum

Tested Options: Solid state starters, battery rescue devices, capacitors, contactors, drives, fans, filters and chokes, p.c. boards, peripherals, power modules, power supplies, receptacles, relays, resistors and transformers

Tested Mounting Description: Rigid or flexible wall (HMC-2000 and mGroup), rigid wall (RESIST-R-C), or rigid base mounted (all other models)

Model	Description	Enclosure Material	NEMA Rating	Dimensions (inches)			Weight (lb)	Mounting	Sds (g), z/h=1	Unit
				Depth	Width	Height				
HMC-2000	Size 1	Painted carbon steel	1	12.0	36.0	42.0	250	Rigid wall	2.50	UUT3a
HMC-2000	Size 1	Painted carbon steel	1	12.0	36.0	42.0	250	Flexible wall	2.50	UUT3b
HMC-2000	Size 2	Painted carbon steel	1	12.0	48.0	36.0	318	Rigid wall	2.50	UUT1a
HMC-2000	Size 2	Painted carbon steel	1	12.0	48.0	36.0	318	Flexible wall	2.50	UUT1b
M4000-AC-01	Size 1	Painted carbon steel	1	16.0	42.0	72.0	481	Rigid base	2.10	UUT5
M4000-AC-01	Size 2	Painted carbon steel	1	17.0	61.0*	72.0	960	Rigid base	2.10	UUT6
mGROUP	One Size	Painted carbon steel	1	6.0	18.0	44.0	96	Rigid wall	2.50	UUT2a
mGROUP	One Size	Painted carbon steel	1	6.0	18.0	44.0	96	Flexible wall	2.50	UUT2b
mGROUP	One Size	Painted carbon steel	1	6.0	18.0	44.0	95	Rigid wall	2.50	UUT4a
mGROUP	One Size	Painted carbon steel	1	6.0	18.0	44.0	95	Flexible wall	2.50	UUT4b
i-AC-01	Size 1	Painted carbon steel	1	16.0	42.0	72.0	560	Rigid base	2.10	UUT7
i-AC-01	Size 2	Painted carbon steel	1	17.0	61.0*	72.0	1,050	Rigid base	2.10	UUT8
i-DC-01	Size 1	Painted carbon steel	1	16.0	42.0	72.0	540	Rigid base	2.50	UUT9
i-DC-01	Size 2	Painted carbon steel	1	16.0	42.0	72.0	550	Rigid base	2.50	UUT10
i-CENTRAL-CUE	One Size	Painted carbon steel	1	23.0	28.0	72.0	402	Rigid base	2.10	UUT11
i-CENTRAL-CUE	One Size	Painted carbon steel	1	23.0	28.0	72.0	380	Rigid base	2.10	UUT12
Filter	One Size	Painted carbon steel	1	14.0	26.0	26.0	111	Rigid base	2.50	UUT13
Filter	One Size	Painted carbon steel	1	14.0	26.0	26.0	166	Rigid base	2.50	UUT14
RESIST-R-C	Size 1	Aluminum	1	10.3	18.0	32.0	40	Rigid base	2.50	UUT15a
RESIST-R-C	Size 1	Aluminum	1	10.3	18.0	32.0	40	Rigid wall	2.50	UUT15b
RESIST-R-C	Size 2	Aluminum	1	10.0	20.8	32.0	51	Rigid base	2.50	UUT16a
RESIST-R-C	Size 2	Aluminum	1	10.0	20.8	32.0	51	Rigid wall	2.50	UUT16b

*Note: UUT6 and UUT8 cabinet width is 61.0" with optional side enclosure, and 46.0" without.

UNIT UNDER TEST - Summary Sheet

UUT1 (a,b)



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: HMC-2000, Serial #8001721

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 208V, Solid state starters, P.C. boards, transformers, resistors, battery rescue devices, relays and fuses

Unit Mounting Description:

UUT1a,b were mounted to the DCL shake table interface frame with four 3/8-inch diameter Grade 5 bolts per panel.

Rigid wall mount (UUT1a): The DCL shake table interface frame was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

Flexible wall mount (UUT1b): The DCL shake table interface frame was flexibly attached to four vibration spring isolators with two 3/4"-dia Grade 5 bolts per isolator. The isolators were welded to the DCL shake table interface plate which was attached to the shake table with M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT1 (a,b)	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	318	12.0	48.0	36.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Rigid test setup (UUT1a), cover removed for photograph



Flexible test setup (UUT1b)

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT2 (a,b)



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: mGROUP, Serial #8001740

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, drives, power supplies, P.C. boards, transformers, filters, chokes, resistors, relays and fuses

Unit Mounting Description:

UUT2a,b were mounted to the DCL shake table interface frame with four 1/4-inch diameter Grade 5 bolts per panel.

Rigid wall mount (UUT2a): The DCL shake table interface frame was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

Flexible wall mount (UUT2b): The DCL shake table interface frame was flexibly attached to four vibration spring isolators with two 3/4"-dia Grade 5 bolts per isolator. The isolators were welded to the DCL shake table interface plate which was attached to the shake table with M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT2 (a,b)	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	96	6.0	18.0	44.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Rigid test setup (UUT2a)



Flexible test setup (UUT2b)

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet

UUT3 (a,b)



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: HMC-2000, Serial #8001765

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 480V, Solid state starters, P.C. boards, transformers, resistors, battery rescue devices, relays and fuses

Unit Mounting Description:

UUT3a,b were mounted to the DCL shake table interface frame with four 3/8-inch diameter Grade 5 bolts per panel.

Rigid wall mount (UUT3a): The DCL shake table interface frame was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

Flexible wall mount (UUT3b): The DCL shake table interface frame was flexibly attached to four vibration spring isolators with two 3/4"-dia Grade 5 bolts per isolator. The isolators were welded to the DCL shake table interface plate which was attached to the shake table with M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT3 (a,b)	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	250	12.0	36.0	42.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Rigid test setup (UUT3a), cover removed for photograph



Flexible test setup (UUT3b)

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT4 (a,b)



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: mGROUP, Serial #8001741

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, drives, power supplies, P.C. boards, transformers, filters, chokes, resistors, relays and fuses

Unit Mounting Description:

UUT4a,b were mounted to the DCL shake table interface frame with four 1/4-inch diameter Grade 5 bolts per panel.

Rigid wall mount (UUT4a): The DCL shake table interface frame was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

Flexible wall mount (UUT4b): The DCL shake table interface frame was flexibly attached to four vibration spring isolators with two 3/4"-dia Grade 5 bolts per isolator. The isolators were welded to the DCL shake table interface plate which was attached to the shake table with M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT4 (a,b)	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	95	6.0	18.0	44.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Rigid test setup (UUT4a)



Flexible test setup (UUT4b)

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT5



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: M4000-AC-01, Serial #8001723

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 208V, capacitors, contactors, drive, fan, filters, choke, P.C. boards, power supply, relays, surge protector, auxiliary contactors, resistors and transformers

Unit Mounting Description: UUT5 was rigid base mounted to the DCL shake table interface plate with six 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT5	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	481	16.0	42.0	72.0	4.50	8.80	28.00

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.10	1.0	1.5	3.36	2.52	1.41	0.57



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT6



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: M4000-AC-01, Serial #8001722

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 480V, capacitors, contactors, drive, fan, filters, choke, P.C. boards, power supply, relays, surge protector, auxiliary contactors, resistors and transformers

Unit Mounting Description: UUT6 was rigid base mounted to the DCL shake table interface plate with four 1/2-inch Grade 5 bolts for the main cabinet, and four 1/2-inch Grade 5 bolts for the optional side enclosure that was tested with the main cabinet. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT6	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	960	17.0	61.0*	72.0	5.00	10.80	25.50

*Width with optional side enclosure is 61", and without optional side enclosure is 46".

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.10	1.0	1.5	3.36	2.52	1.41	0.57



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT7



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: i-AC-01, Serial #8001862

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 208V, capacitors, contactors, drives, fan, filter, line inductor, P.C. boards, power modules, power supplies, relays, relay terminal, timer, resistors and transformers

Unit Mounting Description: UUT7 was rigid base mounted to the DCL shake table interface plate with six 1/2-inch Grade 5 bolts per unit. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT7	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	560	16.0	42.0	72.0	4.30	8.30	29.50

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.10	1.0	1.5	3.36	2.52	1.41	0.57



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT8



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: i-AC-01, Serial #8001863

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 480V, capacitors, contactors, drives, fans, filters and chokes, printed circuit boards, power modules, power supplies, relay, timer, resistors and transformers

Unit Mounting Description: UUT8 was rigid base mounted to the DCL shake table interface plate with four 1/2-inch Grade 5 bolts for the main cabinet, and four 1/2-inch Grade 5 bolts for the optional side enclosure that was tested with the main cabinet. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT8	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	1,050	17.0	61.0*	72.0	5.50	5.80	20.30

*Width with optional side enclosure is 61", and without optional side enclosure is 46".

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.10	1.0	1.5	3.36	2.52	1.41	0.57



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT9



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: i-DC-01, Serial #8001880

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, capacitors, contactors, drives, sprinted circuit boards, power modules, power supplies, relay, timer, resistors and transformers

Unit Mounting Description: UUT9 was rigid base mounted to the DCL shake table interface plate with eight 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT9	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	540	16.0	42.0	72.0	7.50	11.50	20.30

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT10



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: i-DC-01, Serial #8001881

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, capacitors, contactors, drives, power supplies, P.C. boards, power modules, power supplies, relays, timer, transformers

Unit Mounting Description: UUT10 was rigid base mounted to the DCL shake table interface plate with eight 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT10	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	550	17.0	46.0	72.0	7.00	11.00	19.80

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT11



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: i-CENTRAL-CUE, Serial #8001861

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, capacitor, fan, p.c. board, computer and peripherals, power supply, receptacle, power strip, relays, relay terminal and transformers

Unit Mounting Description: UUT11 was rigid base mounted to the DCL shake table interface plate with eight 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT11	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	402	23.0	28.0	72.0	23.30	12.00	27.50

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.10	1.0	1.5	3.36	2.52	1.41	0.57



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT12



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: i-CENTRAL-CUE, Serial #8001860

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, capacitor, fan, p.c. board, computer and peripherals, power supply, receptacle, power strip, relays, relay terminal and transformers

Unit Mounting Description: UUT12 was rigid base mounted to the DCL shake table interface plate with eight 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT12	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	380	23.0	28.0	72.0	13.80	13.00	26.80

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.10	1.0	1.5	3.36	2.52	1.41	0.57



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT13



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: Filter, Serial# 8001865

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, fan, filter

Unit Mounting Description: UUT13 was rigid base mounted to the DCL shake table interface plate with four 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT13	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	111	14.3	30.0	25.8	27.00	>33.3	26.50

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT14



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: Filter, Serial #8001864

Product Construction Summary: Painted carbon steel enclosure, NEMA 1

Options / Subcomponent Summary: 120V, fan, filter

Unit Mounting Description: UUT14 was rigid base mounted to the DCL shake table interface plate with eight 1/2-inch Grade 5 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT14	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	166	14.0	26.0	26.0	>33.3	>33.3	16.30

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT15a



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: RESIST-R-C, Serial #31-RA-0008

Product Construction Summary: Aluminum enclosure, NEMA 1

Options / Subcomponent Summary: 4.9 ohm, 1600W resistors

Unit Mounting Description: UUT15a was rigid base mounted to the DCL shake table interface plate with six 1/2-inch Grade 8 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT15a	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	40	10.3	18.0	32.0	>33.3	20.80	23.80

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT16a



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: RESIST-R-C, Serial #31-RA-0005

Product Construction Summary: Aluminum enclosure, NEMA 1

Options / Subcomponent Summary: 3.32 ohm, 1600W resistors

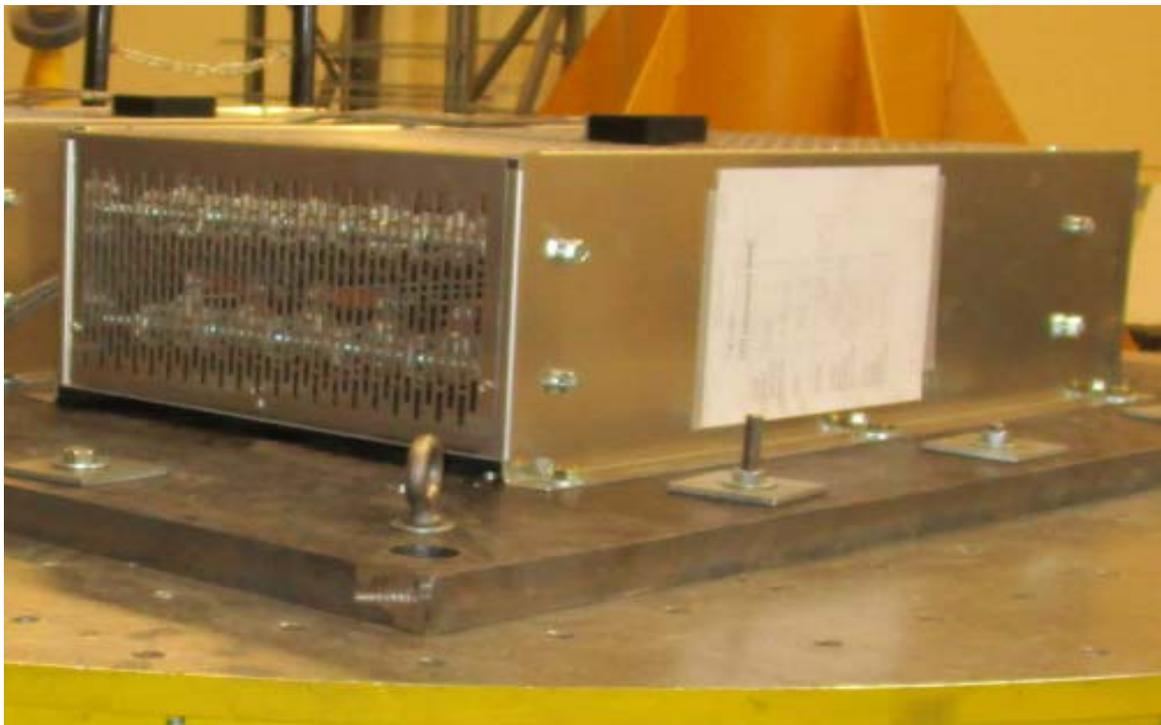
Unit Mounting Description: UUT16a was rigid base mounted to the DCL shake table interface plate with six 1/2-inch Grade 8 bolts. The DCL shake table interface plate was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT16a	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	51	10.0	20.8	32.0	>33.3	20.00	19.30

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT15b



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: RESIST-R-C, Serial #31-RA-0008

Product Construction Summary: Aluminum enclosure, NEMA 1

Options / Subcomponent Summary: 4.9 ohm, 1600W resistors

Unit Mounting Description: UUT15b was rigid wall mounted to the DCL shake table interface frame with six 1/2-inch Grade 8 bolts. The DCL shake table interface frame was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT15b	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	40	10.3	18.0	32.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.

UNIT UNDER TEST - Summary Sheet
UUT16b



Manufacturer: Motion Control Engineering, Inc.

Product Line: Elevator Control Panels

Model Number: RESIST-R-C, Serial #31-RA-0005

Product Construction Summary: Aluminum enclosure, NEMA 1

Options / Subcomponent Summary: 3.32 ohm, 1600W resistors

Unit Mounting Description: UUT16b was rigid wall mounted to the DCL shake table interface frame with six 1/2-inch Grade 8 bolts. The DCL shake table interface frame was rigidly attached to the shake table using M12 threaded rod spaced approximately 8-inches on-center.

UUT Properties

UUT16b	Operating Weight (lb)	Dimensions (in)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	51	10.0	20.8	32.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2013	2012 ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.68	0.68



Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component and attachment system and force-resisting systems was maintained.