



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

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

OFFICE USE ONLY

APPLICATION #: OSP-0166

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: TK Elevator

Manufacturer's Technical Representative: Ray Nooner

Mailing Address: 9280 Crestwyn Hills Drive, Memphis, TN 38125

Telephone: (901) 261-1800

Email: Ray.nooner@tkelevator.com

Product Information

Product Name: Elevator Equipment

Product Type: Elevator Controllers

Product Model Number: Varies, see attachment.

General Description: Carbon steel cabinets with internal electrical components.

Mounting Description: Rigid, Wall Mounted

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

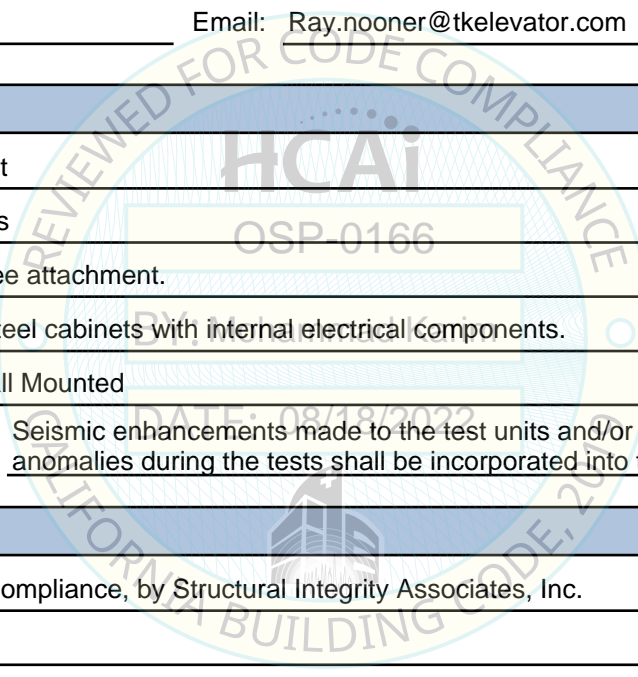
Contact Person: Daniel Zentner

Mailing Address: 5215 Hellyer Ave. Suite 210, San Jose, CA 95138

Telephone: (541) 292-5839

Email: dzentner@structint.com

Title: Program Manager





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

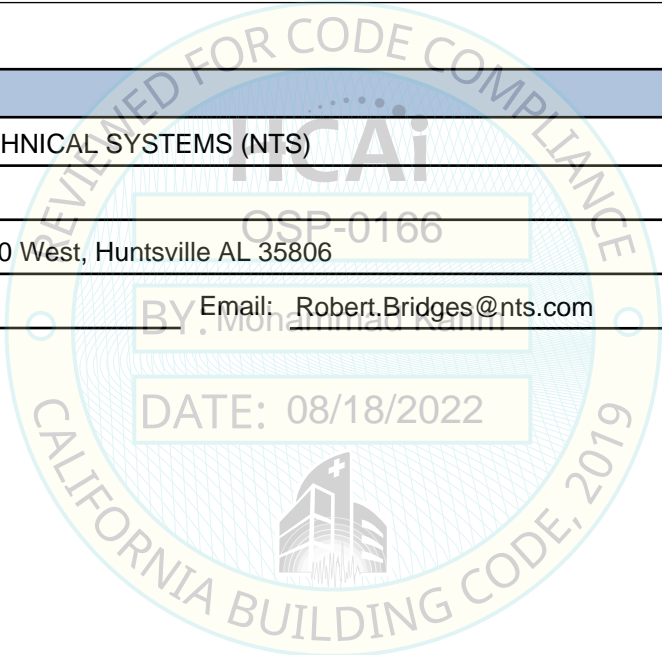
Company Name: STRUCTURAL INTEGRITY ASSOCIATES, INC.
Name: Andrew Coughlin California License Number: S6082
Mailing Address: 5215 Hellyer Ave, Suite 101, San Jose, CA 95138-1025
Telephone: (415) 635-8461 Email: acoughlin@structint.com

Certification Method

GR-63-Core ICC-ES AC156 IEEE 344 IEEE 693 NEBS 3
 Other (Please Specify): _____

Testing Laboratory

Company Name: NATIONAL TECHNICAL SYSTEMS (NTS)
Contact Person: Robert Bridges
Mailing Address: 7800 Highway 20 West, Huntsville AL 35806
Telephone: (256) 837-4411 Email: Robert.Bridges@nts.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.08

SDS (Design spectral response acceleration at short period, g) = 1.5

a_p (Amplification factor) = 1.0

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

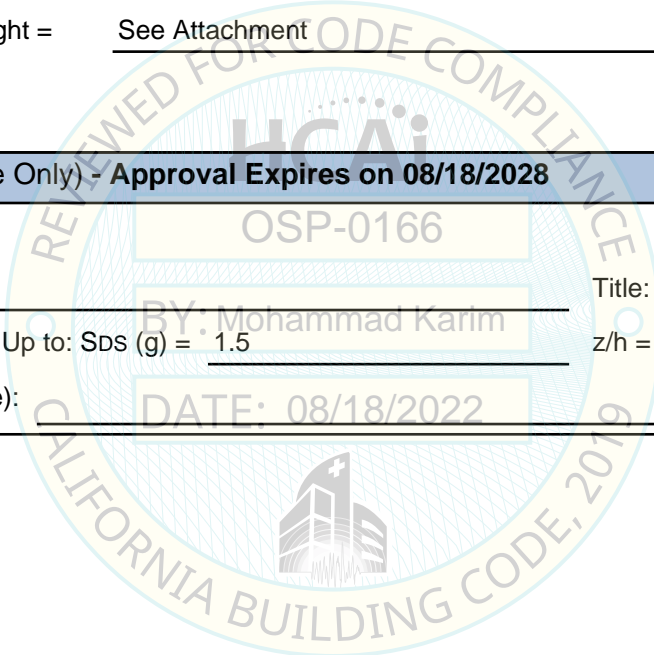
HCAI Approval (For Office Use Only) - Approval Expires on 08/18/2028

Date: 8/18/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 1.5 z/h = See Above

Condition of Approval (if applicable): DATE: 08/18/2022



SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	TABLE 1
Model Line: Hydraulic Controller	

Certified Product Construction Summary:
NEMA 1, 11 Gauge Carbon Steel Enclosure

Certified Options Summary:
See Tables 2 - 7 for a complete listing of certified components.

Mounting Configuration:
Wall mounted - rigid
Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

Building Code: CBC 2022 **Seismic Certification Limits:** $S_{DS} = 1.5g$ $z/h = 1.0$ $I_p = 1.5$
 $S_{DS} = 1.5g$ $z/h = 0.0$

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Hydraulic Controller	TAC32	9.0	33.0	28.0	170	UUT5: 133lbs	5, 6

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

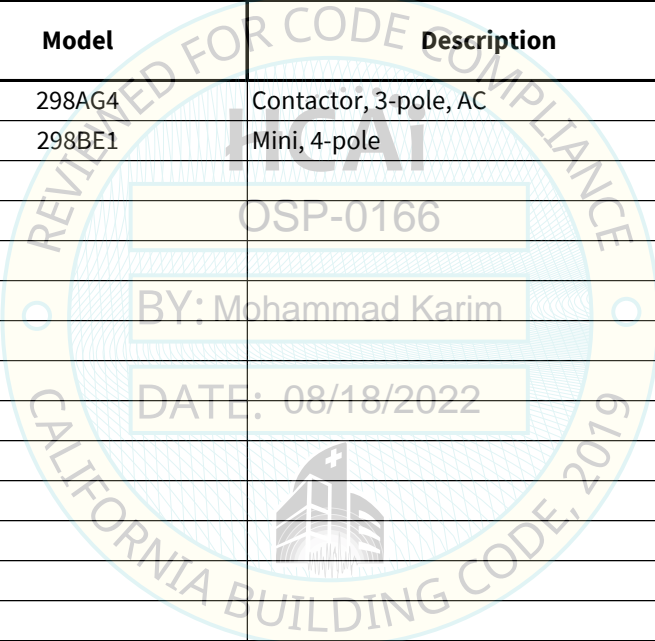
TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	Table Description: Contactors	TABLE 2
Model Line: Hydraulic Controller		

Building Code: CBC 2022	Seismic Certification Limits:	$S_{DS} = 1.5g \quad z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 1.5g \quad z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Contactors	Siemens	298AG4	Contactor, 3-pole, AC		3, 6
		298BE1	Mini, 4-pole		3



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

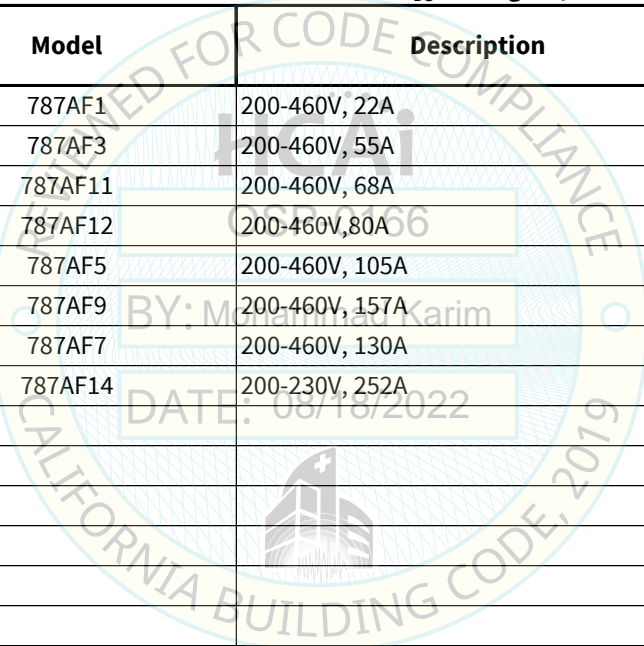
TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	Table Description: Starters	TABLE 3
Model Line: Hydraulic Controller		

Building Code: CBC 2022	Seismic Certification Limits:	$S_{DS} = 1.5 g$ $z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 1.5 g$ $z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Electronic Starter	Siemens	787AF1	200-460V, 22A		Extrap.
		787AF3	200-460V, 55A		Extrap.
		787AF11	200-460V, 68A	Obsolete Model	2, 5
		787AF12	200-460V, 80A		Interp.
		787AF5	200-460V, 105A		Interp.
		787AF9	200-460V, 157A		Interp.
		787AF7	200-460V, 130A		Interp.
		787AF14	200-230V, 252A		3, 6



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.		Table Description: Fuses			TABLE 4
Model Line: Hydraulic Controller					
Building Code: CBC 2022		Seismic Certification Limits:			
		$S_{DS} = 1.5 g \quad z/h = 1.0$		$I_p = 1.5$	
		$S_{DS} = 1.5 g \quad z/h = 0.0$			
Component Type	Manufacturer	Model	Description	Notes	UUT
Fuseblock DIN Rail	Bussman	412BE2	600V, 30A, 2-pole		5, 6
Fuse Panel FNQ	Bussman	409BP23	600V, 4A		2, 5
		409BP24	600V, 5A		Interp.
		409BP25	600V, 6A		Interp.
		409BP28	600V, 8A	Obsolete Model	6
		409CW500	250V, 0.5A		Extrap.
Fuse Panel 2AG	Bussman	409CW1000	250V, 1A		Extrap.
		409CW2000	250V, 2A		5
		409CW3000	250V, 3A	Obsolete Model	6
		409BR10	4A		5, 6
Fuse Panel MDA	Bussman				

SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

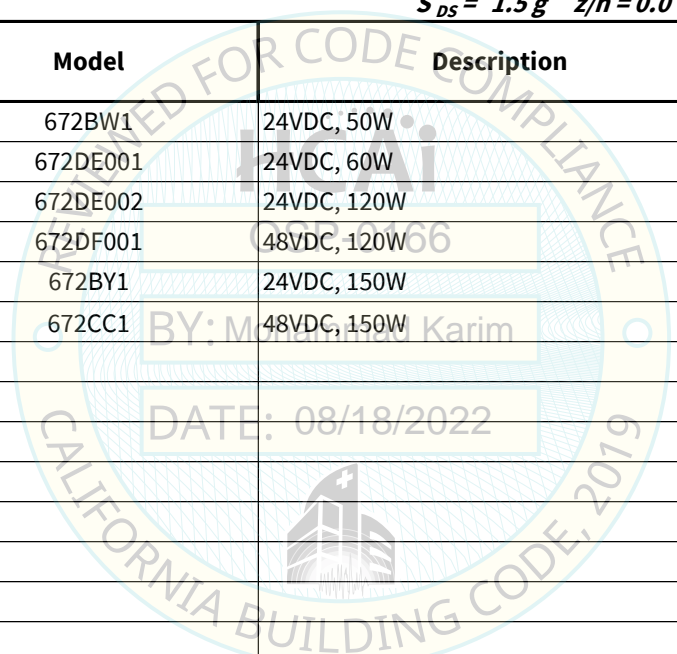
TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	Table Description: Power Supplies	TABLE 5
Model Line: Hydraulic Controller		

Building Code: CBC 2022	Seismic Certification Limits: $S_{DS} = 1.5 g \quad z/h = 1.0$ $S_{DS} = 1.5 g \quad z/h = 0.0$	$I_p = 1.5$
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Component Type	Manufacturer	Model	Description	Notes	UUT
Power Supplies	Lambda	672BW1	24VDC, 50W		2, 3, 5
		672DE001	24VDC, 60W		Interp.
		672DE002	24VDC, 120W		Interp.
		672DF001	48VDC, 120W		Interp.
		672BY1	24VDC, 150W		Interp.
		672CC1	48VDC, 150W	Obsolete Model	3



**SPECIAL SEISMIC CERTIFICATION
CERTIFIED SUBCOMPONENT MATRIX**

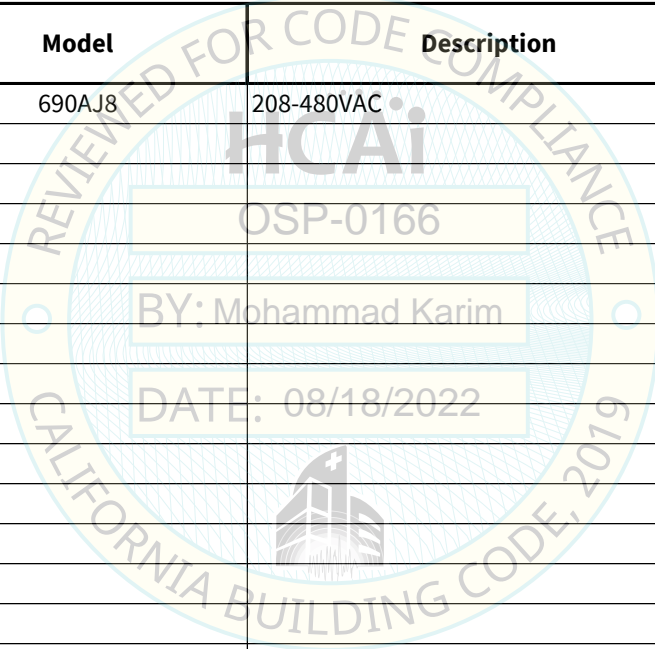
TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	Table Description: Relays	TABLE 6
Model Line: Hydraulic Controller		

Building Code: CBC 2022 **Seismic Certification Limits:** $S_{DS} = 1.5g \quad z/h = 1.0$ $I_p = 1.5$
 $S_{DS} = 1.5g \quad z/h = 0.0$

Component Type	Manufacturer	Model	Description	Notes	UUT
Relays	Tyco	690AJ8	208-480VAC		3,5



SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

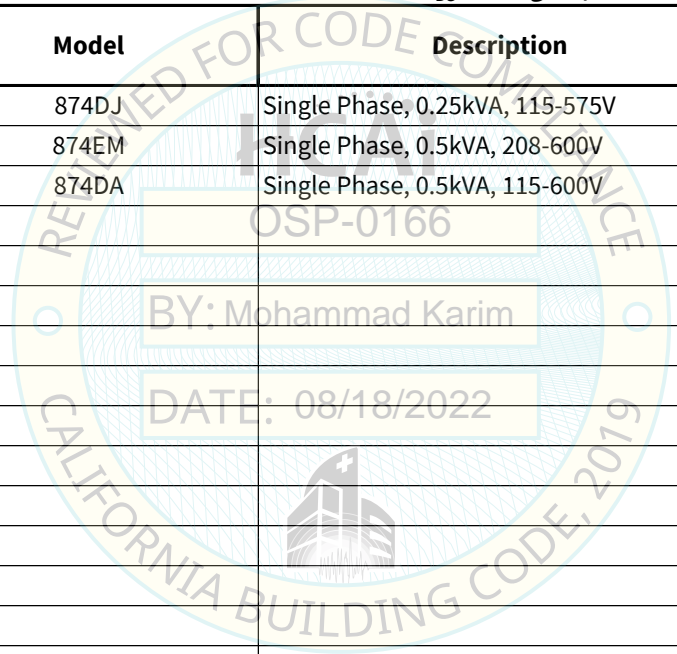
TRU PROJECT NO. 2200407



Manufacturer:	TK Elevator Manufacturing, Inc.	Table Description: Transformers		TABLE 7
Model Line:	Hydraulic Controller			

Building Code: CBC 2022	Seismic Certification Limits:	$S_{DS} = 1.5g \quad z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 1.5g \quad z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Trasformers	GE	874DJ	Single Phase, 0.25kVA, 115-575V	Obsolete Model	3
		874EM	Single Phase, 0.5kVA, 208-600V		Interp.
		874DA	Single Phase, 0.5kVA, 115-600V		5, 6



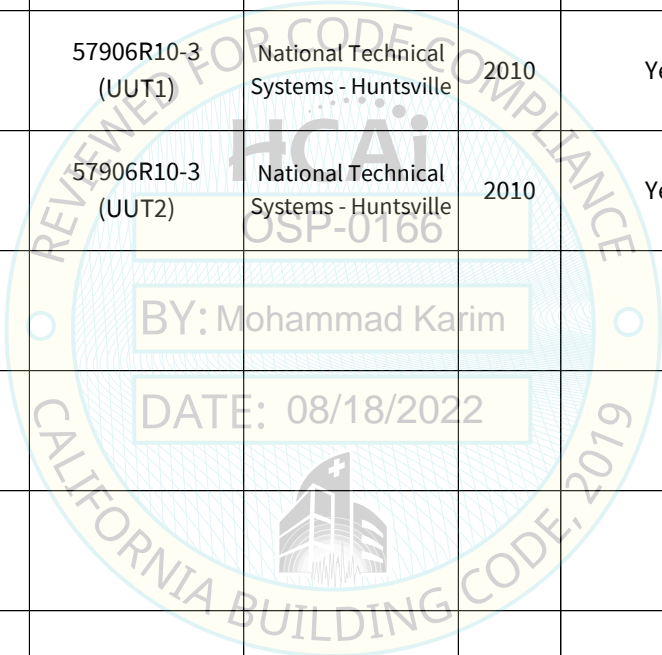
UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.
Model Line: Hydraulic Controller

UUT	Unit Description	Report Number	Testing Lab	Year Tested	ISO 17025 Accredited?	S _{DS}	z/h	I _p
2	TAC22	57906R10-1 (UUT2)	National Technical Systems - Huntsville	2010	Yes	1.5 1.5	1.0 0.0	1.5
3	TAC22 Tall	57906R10-2 (UUT1)	National Technical Systems - Huntsville	2010	Yes	1.5 1.5	1.0 0.0	1.5
5	TAC32	57906R10-3 (UUT1)	National Technical Systems - Huntsville	2010	Yes	1.5 1.5	1.0 0.0	1.5
6	TAC32	57906R10-3 (UUT2)	National Technical Systems - Huntsville	2010	Yes	1.5 1.5	1.0 0.0	1.5



UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	UUT 2
Model Line: Hydraulic Controller	
Model Number: TAC22 Serial Number: N/A	

Product Construction Summary:
NEMA 1 Enclosure Type

Options/Subcomponent Summary:
Contactors: Siemens (298AG2, 804BC1, 804BC2); **Electronic Starter:** Siemens (787AF11);
Fuseblock DIN Rail: Bussman (412BF1, 412BC1); **Fuse Panel FNQ:** Bussman (409BP23);
Fuse Panel MDA: Bussman (409BR5, 409BR7); **Power Supplies:** Lambda (672BW1);
Relays: Tyco (690CA3, 690CA5, 690CJ1)

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
165	12.0	33.0	33.0	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2022	ICC-ES AC156	1.5	1.0	1.5	2.40	1.80	1.00	0.40
		1.5	0.0					

Test Mounting Details:



Wall Mounted - Rigid to fixture using six (6) 3/8"-16 Grade 5 bolts and washers.
 Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
 Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	UUT 3
Model Line: Hydraulic Controller	
Model Number: TAC22 Tall Serial Number: N/A	

Product Construction Summary:
NEMA 1 Enclosure Type

Options/Subcomponent Summary:
Contactors: Siemens (298AG4, 298BE1, 804BC1, 804BC2); **Electronic Starter:** Siemens (787AF14);
Fuseblock DIN Rail: Bussman (412BF1, 412BC1); **Fuse Panel FNQ:** Bussman (409BP20);
Fuse Panel MDA: Bussman (409BR5, 409BR7, 409BR9, 409BR11); **Power Supplies:** Lambda (672BW1, 672CC1);
Relays: Tyco (690CA3, 690CA5, 690AJ8, 690CJ1); **Transformers:** GE (874DJ)

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
168	10.6	33.0	42.0	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2022	ICC-ES AC156	1.5	1.0	1.5	2.40	1.80	1.00	0.40
		1.5	0.0					

Test Mounting Details:



Wall Mounted - Rigid to fixture using six (6) 3/8"-16 Grade 5 bolts and washers.
 Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
 Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	UUT 5
Model Line: Hydraulic Controller	
Model Number: TAC32 Serial Number: N/A	

Product Construction Summary:
NEMA 1 Enclosure Type

Options/Subcomponent Summary:
Fuseblock DIN Rail: Bussman (412BE2); **Fuse Panel FNQ:** Bussman (409BP23); **Fuse Panel 2AG:** Bussman (409CW2000);
Fuse Panel MDA: Bussman (409BR10); **Power Supplies:** Lambda (672BW1); **Relays:** Tyco (690AJ8);
Transformers: GE (874DA); **Electronic Starter:** Siemens (787AF11)

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
133	9.0	33.0	28.0	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2022	ICC-ES AC156	1.5	1.0	1.5	2.40	1.80	1.00	0.40
		1.5	0.0					

Test Mounting Details:



Wall Mounted - Rigid to fixture using six (6) 3/8"-16 Grade 5 bolts and washers.
 Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
 Contents were included in testing per operating conditions.

UNIT UNDER TEST (UUT) SUMMARY SHEET

TRU PROJECT NO. 2200407



Manufacturer: TK Elevator Manufacturing, Inc.	UUT 6
Model Line: Hydraulic Controller	
Model Number: TAC32 Serial Number: N/A	

Product Construction Summary:
NEMA 1 Enclosure Type

Options/Subcomponent Summary:
Contactors: Siemens (298AG4); **Electronic Starter:** Siemens (787AF14); **Fuseblock DIN Rail:** Bussman (412BE2);
Fuse Panel FNQ: Bussman(409BP28); **Fuse Panel 2AG:** Bussman (409CW3000); **Fuse Panel MDA:** Bussman (409BR10);
Transformers: GE (874DA)

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
170	9.0	33.0	28.0	N/A	N/A	N/A

UUT Highest Passed Seismic Run Information

Building Code	Test Criteria	S _{DS} (g)	z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
CBC 2022	ICC-ES AC156	1.5	1.0	1.5	2.40	1.80	1.00	0.40
		1.5	0.0					

Test Mounting Details:



Wall Mounted - Rigid to fixture using six (6) 3/8"-16 Grade 5 bolts and washers.
 Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
 Contents were included in testing per operating conditions.