



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

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

OFFICE USE ONLY

**APPLICATION #: OSP-0810**

**HCAI Special Seismic Certification Preapproval (OSP)**

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Alpha Elevator Control

Manufacturer's Technical Representative: Christian Moya

Mailing Address: 6711 Power Inn Rd, Suite B, Sacramento, CA 95828

Telephone: (916) 234-5787

Email: christianmoya@alphaelevatorcontrol.com

**Product Information**

Product Name: Elevator Equipment

Product Type: Elevator Controllers

Product Model Number: LYKOS-H Hydraulic Elevator Controllers

General Description: Hydraulic elevator controllers with Yaskawa GA700 drives inside NEMA 1 enclosure on legs.

Mounting Description: Rigid, Floor 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: Manwill Engineering LLC

Contact Person: Derek Manwill

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: (541) 241-2102

Email: derek@manwillse.com

Title: President





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FACILITIES DEVELOPMENT DIVISION**

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

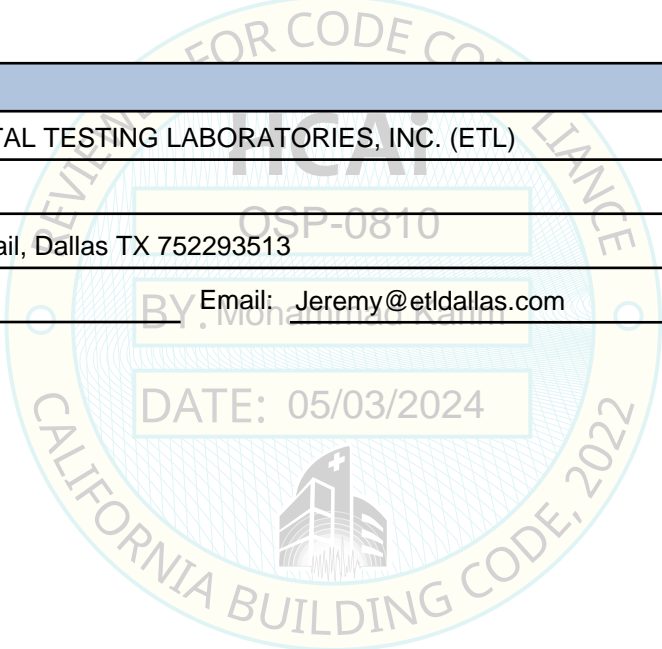
Company Name: MANWILL ENGINEERING LLC  
Name: Derek Manwill California License Number: S6266  
Mailing Address: PO Box 1194, Bend, OR 97709  
Telephone: (541) 241-2102 Email: derek@manwillse.com

**Certification Method**

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

**Testing Laboratory**

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)  
Contact Person: Jeremy Lange  
Mailing Address: 11034 Indian Trail, Dallas TX 752293513  
Telephone: (972) 247-9657 Email: Jeremy@etldallas.com





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION  
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**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.44 (SDS=2.00, z/h=1), 1.13 (SDS=2.50, z/h=0)

SDS (Design spectral response acceleration at short period, g) = 2.00 (z/h=1), 2.50 (z/h=0)

$a_p$  (Amplification factor) = 1

$R_p$  (Response modification factor) = 2.5

$\Omega_0$  (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

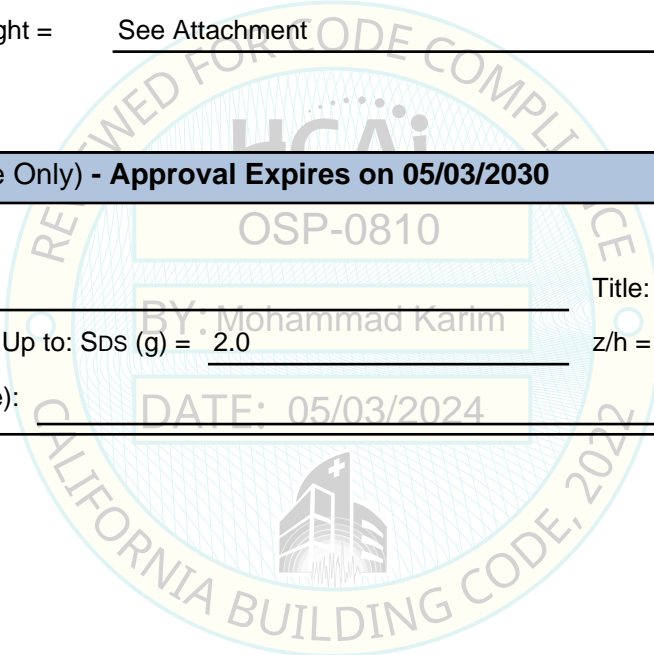
**HCAI Approval (For Office Use Only) - Approval Expires on 05/03/2030**

Date: 5/3/2024

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = 1

Condition of Approval (if applicable): DATE: 05/03/2024



## ALPHA ELEVATOR CONTROL LYKOS-H Hydraulic Elevator Controllers

**TABLE 1**

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
<b>LYKOS-H Hydraulic Elevator Controllers</b>						
AEC-H-20-50-CUSTOM	15	34	68	328	208-240V, 50hp	<b>UUT 2</b>
AEC-H-40-5	15	34	68	360	480V, 5hp	INTERP
AEC-H-40-10	15	34	68	360	480V, 10hp	INTERP
AEC-H-20-5	15	34	68	360	208-240V, 5hp	INTERP
AEC-H-40-15	15	34	68	360	480V, 15hp	INTERP
AEC-H-20-7.5	15	34	68	360	208-240V, 7.5hp	INTERP
AEC-H-40-20	15	34	68	360	480V, 20hp	INTERP
AEC-H-20-10	15	34	68	360	208-240V, 10hp	INTERP
AEC-H-40-25	15	34	68	360	480V, 25hp	INTERP
AEC-H-40-30	15	34	68	360	480V, 30hp	INTERP
AEC-H-20-15	15	34	68	360	208-240V, 15hp	INTERP
AEC-H-40-40	15	34	68	360	480V, 40hp	INTERP
AEC-H-20-20	15	34	68	360	208-240V, 20hp	INTERP
AEC-H-40-50	15	34	68	360	480V, 50hp	INTERP
AEC-H-20-25	15	34	68	360	208-240V, 25hp	INTERP
AEC-H-40-60	15	34	68	360	480V, 60hp	INTERP
AEC-H-20-30	15	34	68	360	208-240V, 30hp	INTERP
AEC-H-40-75	15	34	68	360	480V, 75hp	INTERP
AEC-H-20-40	15	34	68	360	208-240V, 40hp	INTERP
AEC-H-40-100	15	34	68	360	480V, 100hp	INTERP
AEC-H-20-50	15	34	68	360	208-240V, 50hp	INTERP
AEC-H-40-60-CUSTOM	15	34	68	360	480V, 60hp	<b>UUT 1</b>

<b>Mounting:</b> Rigid Floor Mounted on Legs	<b>Seismic Levels:</b>	S <sub>DS</sub> = 2.00g for z/h = 1 S <sub>DS</sub> = 2.50g for z/h = 0	I <sub>p</sub> = 1.5
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**Product Construction:** NEMA 1 carbon steel enclosure and legs manufactured by Ningbo Hi-Tech Zone Pecaf Imp. & Exp. CO. LTD. Enclosure is 0.086-in thick and 15-in deep X 34-in wide X 44-in tall. Legs are 0.125-in thick and 24-in tall. Height in table includes leg height. Back panel assembly is aluminum.

**Options/Subcomponents:** Controller may contain any combination of subcomponents listed in the subcomponents table to make a complete controller. The total weight must be less than or equal to the listed weight of the overall controller.

## ALPHA ELEVATOR CONTROL LYKOS-H Hydraulic Elevator Controllers

### TABLE 2. SUBCOMPONENTS

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
<b>Type: GA700 AC Drive - Mfr: Yaskawa</b>						
GA70C4012BBA	8.3	5.5	10.2	8.6	480V,5hp	EXTRAP
GA70C4018BBA	8.3	5.5	10.2	9.3	480V,7.5hp	EXTRAP
GA70C4023BBA	8.3	5.5	10.2	9.3	480V,10hp	EXTRAP
GA70C4031BBA	8.0	7.1	11.8	13.2	480V,15hp	EXTRAP
GA70C4038BBA	8.0	7.1	11.8	13.2	480V,20hp	EXTRAP
GA70C4044BBA	8.9	8.7	13.8	16.5	480V,25hp	EXTRAP
GA70C4060BBA	9.7	8.7	13.8	26.5	480V,30hp	EXTRAP
GA70C4075BBA	11.0	9.4	15.7	37.5	480V,40hp	EXTRAP
GA70C4089BBA	11.0	10.0	17.7	48.5	480V,50hp	EXTRAP
GA70C4103BBA	11.0	10.0	17.7	55.1	480V,60hp	UUT 2
GA70C4140BBA	13.2	10.4	21.4	83.8	480V,75hp	INTERP
GA70C4168BBA	13.2	10.4	21.4	86.0	480V,100hp	INTERP
GA70C2021BBA	8.3	5.5	10.2	8.6	200-240V,5hp	EXTRAP
GA70C2030BBA	8.3	5.5	10.2	9.3	200-240V,7.5hp	EXTRAP
GA70C2042BBA	8.3	5.5	10.2	9.3	200-240V,10hp	EXTRAP
GA70C2056BBA	8.0	7.1	11.8	13.2	200V-240,15hp	EXTRAP
GA70C2070BBA	8.9	8.7	13.8	18.7	200V-240,20hp	EXTRAP
GA70C2082BBA	8.9	8.7	13.8	19.8	200-240V,25hp	EXTRAP
GA70C2110BBA	11.0	9.4	15.7	48.5	200-240V,30hp	EXTRAP
GA70C2138BBA	11.0	10.0	17.7	52.9	200-240V,40hp	EXTRAP
GA70C2169BBA	13.2	10.4	21.4	86.0	200-240V,50hp	UUT 1
<b>Type: Transformer - Mfr: Pacific Transformers</b>						
42560	4.5	5.3	5.0	14.0		UUT 2
41813	5.5	5.3	6.5	25.0		UUT 1
<b>Type: Battery Lowering - Mfr: Reynolds and Reynolds</b>						
RB2-240/GL	6.0	6.5	8.5	25.0		UUT 1
<b>Type: Power Supply - Mfr: Wieland</b>						
wipos PS1 24-5	4.8	4.9	1.6	1.4		UUT 1,2
<b>Type: Battery Disconnect Switch - Mfr: Sprecher &amp; Schuh</b>						
LA7-25-1753-R	3.4	1.8	2.5	1.0		UUT 1
<b>Type: Fan - Mfr: AC Infinity Inc.</b>						
LS1238A	1.5	4.7	4.7	1.6		UUT 1,2
<b>Type: Receptacle Outlet Box - Mfr: Automation Direct</b>						
FA-GFCI	2.3	5.7	2.1	0.5		UUT 1
<b>Type: CA-9 Contactor - Mfr: Sprecher &amp; Schuh</b>						
CA9-S1/2	2.8	0.4	3.5	0.2		UUT 1,2
CA9-S3/4	2.8	0.4	3.5	0.2		INTERP
CA9-116	5.0	3.5	5.9	3.3		INTERP
CA9-146	5.0	3.5	5.9	3.3		INTERP
CA9-190	6.0	4.1	7.7	6.6		INTERP
CA9-205	6.0	4.1	7.7	6.6		UUT 1
CA9-265	7.1	5.5	8.9	10.2		UUT 2

**Notes:** Table continues on the next page. Additional notes, information, and seismic parameters are shown at the end of the table.

**ALPHA ELEVATOR CONTROL  
LYKOS-H Hydraulic Elevator Controllers**

**TABLE 2. SUBCOMPONENTS (CONTINUED)**

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
<b>Type: CA-7 Contactor - Mfr: Sprecher &amp; Schuh</b>						
CA7-PA	3.6	0.4	3.2	0.2		EXTRAP
CA7-9	3.4	1.8	3.2	0.9		EXTRAP
CA7-12	3.4	1.8	3.2	0.9		EXTRAP
CA7-16	3.4	1.8	3.2	0.9		EXTRAP
CA7-23	3.4	1.8	3.2	0.9		EXTRAP
CA7-30	4.3	1.8	3.2	1.1		EXTRAP
CA7-37	4.3	1.8	3.2	1.1		EXTRAP
CA7-43	4.4	2.1	3.2	1.1		EXTRAP
CA7-55	4.4	2.1	3.2	1.1		<b>UUT 2</b>
CA7-60	4.9	2.8	4.8	3.2		INTERP
CA7-72	4.9	2.8	4.8	3.2		INTERP
CA7-85	4.9	2.8	4.8	3.2		INTERP
CA7-97	4.9	2.8	4.8	3.2		<b>UUT 1</b>
<b>Type: L9 Circuit Breaker - Mfr: Sprecher &amp; Schuh</b>						
L9-1/1/D	2.9	4.4	0.7	0.3		<b>UUT 1,2</b>
L9-2/1/D	2.9	4.4	0.7	0.3		<b>UUT 1,2</b>
L9-3/1/D	2.9	4.4	0.7	0.3		INTERP
L9-4/1/D	2.9	4.4	0.7	0.3		INTERP
L9-5/1/D	2.9	4.4	0.7	0.3		INTERP
L9-6/1/D	2.9	4.4	0.7	0.3		INTERP
L9-7/1/D	2.9	4.4	0.7	0.3		INTERP
L9-8/1/D	2.9	4.4	0.7	0.3		INTERP
L9-10/1/D	2.9	4.4	0.7	0.3		INTERP
L9-13/1/D	2.9	4.4	0.7	0.3		INTERP
L9-1/2/D	3.0	4.4	1.4	0.9		INTERP
L9-2/2/D	3.0	4.4	1.4	0.9		INTERP
L9-3/2/D	3.0	4.4	1.4	0.9		<b>UUT 2</b>
L9-4/2/D	3.0	4.4	1.4	0.9		INTERP
L9-5/2/D	3.0	4.4	1.4	0.9		INTERP
L9-6/2/D	3.0	4.4	1.4	0.9		INTERP
L9-7/2/D	3.0	4.4	1.4	0.9		INTERP
L9-8/2/D	3.0	4.4	1.4	0.9		INTERP
L9-10/2/D	3.0	4.4	1.4	0.9		<b>UUT 1</b>
L9-1/3/C	3.0	4.4	2.1	0.9		INTERP
L9-2/3/C	3.0	4.4	2.1	0.9		<b>UUT 2</b>
L9-3/3/C	3.0	4.4	2.1	0.9		INTERP
L9-4/3/C	3.0	4.4	2.1	0.9		INTERP
L9-5/3/C	3.0	4.4	2.1	0.9		INTERP
L9-6/3/C	3.0	4.4	2.1	0.9		INTERP
L9-7/3/C	3.0	4.4	2.1	0.9		INTERP
L9-8/3/C	3.0	4.4	2.1	0.9		<b>UUT 1</b>

**Notes:** Table continues on the next page. Additional notes, information, and seismic parameters are shown at the end of the table.

## ALPHA ELEVATOR CONTROL LYKOS-H Hydraulic Elevator Controllers

**TABLE 2. SUBCOMPONENTS (CONTINUED)**

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
<b>Type: Alpha Printed Circuit Boards - Mfr: Valley Contract Manufacturing Services</b>						
AE10U02	0.8	4.1	1.2	0.1		UUT 1
AE02Y03	0.8	3.5	4.5	0.1		UUT 2
AE01Z03	1.0	4.5	2.1	0.1		UUT 1,2
AE01Y06	0.8	2.4	2.5	0.1		UUT 1,2
AE02X01	1.0	4.5	3.3	0.2		UUT 2
AE02Z03	1.8	4.5	2.5	0.2		UUT 2
AE04A04B	0.6	6.0	4.6	0.4		UUT 1
AE11B01	2.8	6.0	4.5	0.7		UUT 2
AE02B01	1.0	6.0	7.0	0.8		UUT 1,2
AE01B04C	1.8	6.0	9.5	1.1		UUT 1,2
<b>Type: Pro-Hydro Interface Card - Mfr: Blain</b>						
Pro-Hydro interface card	1.9	4.3	3.5	0.3		UUT 1,2
<b>Type: LED Light Bar - Mfr: General Electric</b>						
U01/18/10/8/5/120	1.5	10.0	0.8	0.5		UUT 1,2
<b>Type: CE Driver - Mfr: C.E. Electronics</b>						
AEC001-X	1.0	3.0	5.0	0.2		UUT 1,2
<b>Type: Terminal Block - Mfr: Wieland</b>						
58.504.7055.0	2.8	2.6	0.2	0.04		UUT 1,2
58.504.6955.1	2.8	2.6	0.2	0.04		UUT 1,2
58.504.9255.0	2.8	2.6	0.2	0.1		UUT 1,2
57.535.0155.0	2.8	0.6	2.7	0.2		INTERP
57.535.9055.0	2.5	0.6	2.7	0.3		UUT 1
57.570.0155.0	3.0	0.9	3.2	0.4		UUT 1
57.570.9055.0	3.0	0.9	3.2	0.5		UUT 2
57.597.0155.0	3.8	1.1	3.9	0.6		UUT 2
<b>Type: Relay - Mfr: Wieland</b>						
FLARE MOVE 24V-1W-6A	3.0	0.2	3.4	0.1		UUT 1,2
FLARE MOVE 115V-1W-6A	3.0	0.2	3.4	0.1		UUT 1,2
80.063.5026.1	3.0	3.1	0.6	0.1		UUT 1,2
<b>Type: Relay - Mfr: Finder</b>						
50.12.9.024.1000	1.0	1.1	0.5	0.2		UUT 1,2
<b>Type: PCB Connector 8213 B - Mfr: Wieland</b>						
25.340.3253.0	0.7	0.4	0.6	0.01		UUT 1,2
25.340.3353.0	0.7	0.6	0.6	0.01		UUT 1,2
25.340.3453.0	0.7	0.8	0.6	0.02		UUT 1,2
25.340.3553.0	0.7	1.0	0.6	0.02		UUT 1,2
25.340.3653.0	0.7	1.2	0.6	0.02		UUT 1,2
25.340.3853.0	0.7	1.6	0.6	0.03		UUT 1,2
<b>Type: Splice Connector - Mfr: WAGO</b>						
221-412	0.7	0.5	0.3	0.004		UUT 2
<b>Type: RJ45 Splitter - Mfr: Zoro</b>						
T-8P8C-3S	1.3	1.1	0.8	0.02		UUT 1
<b>Mounting:</b> Mounted within unit.				<b>Seismic Levels:</b>	$S_{DS} = 2.00g$ for $z/h = 1$ $S_{DS} = 2.50g$ for $z/h = 0$	$I_p = 1.5$
<b>Construction/Options:</b> Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.						

ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 1

Manufacturer: Alpha Elevator Control  
 Model number: AEC-H-40-60-CUSTOM  
 Unit function: Elevator Controller  
 Serial number: 240327-03-H-C1



Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
15	34	68	360	6.9	23.7	>33

Code & criteria: 2022 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 23084TR1.0 (dated 5-1-24), tested on 4-25-24

S <sub>DS</sub> (g)	z/h	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
2.00	1	3.20	2.40	1.68	0.68
2.50	0				

Importance Factor, I<sub>p</sub> = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Unit was rigid floor mounted with (8) 3/8-in Grade 8 bolts with 1.25-in square plate washers.

Construction: NEMA 1 carbon steel enclosure and legs manufactured by Ningbo Hi-Tech Zone Pecaf Imp. & Exp. CO. LTD. Enclosure is 0.086-in thick and 15-in deep X 34-in wide X 44-in tall. Legs are 0.125-in thick and 24-in tall. Height in table includes leg height. Back panel assembly is aluminum.

Subcomponents: Yaskawa - GA700 AC Drive (GA70C2082BBA), Pacific Transformers - Transformer (41813), Reynolds and Reynolds - Battery Lowering (RB2-240/GL), Wieland - Power Supply (wipos PS1 24-5), Sprecher & Schuh - Battery Disconnect Switch (LA7-25-1753-R), AC Infinity Inc. - Fan (LS1238A), Automation Direct - Receptacle Outlet Box (FA-GFCI), Sprecher & Schuh - CA-9 Contactor (CA9-S1/2, CA9-205), Sprecher & Schuh - CA-7 Contactor (CA7-97), Sprecher & Schuh - L9 Circuit Breaker (L9-1/1/D, L9-2/1/D, L9-10/2/D, L9-8/3/C), Valley Contract Manufacturing Services - Alpha Printed Circuit Boards (AE10U02, AE01Z03, AE01Y06, AE04A04B, AE02B01, AE01B04C), Blain - Pro-Hydro Interface Card (Pro-Hydro interface card), General Electric - LED Light Bar (U01/18/10/8/5/120), C.E. Electronics - CE Driver (AEC001-X), Wieland - Terminal Block (58.504.7055.0, 58.504.6955.1, 58.504.9255.0, 57.535.9055.0, 57.570.0155.0), Wieland - Relay (FLARE MOVE 24V-1W-6A, FLARE MOVE 115V-1W-6A, 80.063.5026.1), Finder - Relay (50.12.9.024.1000), Wieland - PCB Connector 8213 B (25.340.3253.0, 25.340.3353.0, 25.340.3453.0, 25.340.3553.0, 25.340.3653.0, 25.340.3853.0), Zoro - RJ45 Splitter (T-8P8C-3S).

Testing notes: Back panel assembly was modified to add (1) additional 1/4-in bolt at the center of each vertical rail.



ATTACHMENT 2: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 2

Manufacturer: Alpha Elevator Control  
 Model number: AEC-H-20-50-CUSTOM  
 Unit function: Elevator Controller  
 Serial number: 240327-03-H-C2



Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
15	34	68	328	6.8	16.8	>33

Code & criteria: 2022 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 23084TR1.0 (dated 5-1-24), tested on 4-25-24

S <sub>DS</sub> (g)	z/h	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
2.00	1	3.20	2.40	1.68	0.68
2.50	0				

Importance Factor, I<sub>P</sub> = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Unit was rigid floor mounted with (8) 3/8-in Grade 8 bolts with 1.25-in square plate washers.

Construction: NEMA 1 carbon steel enclosure and legs manufactured by Ningbo Hi-Tech Zone Pecaf Imp. & Exp. CO. LTD. Enclosure is 0.086-in thick and 15-in deep X 34-in wide X 44-in tall. Legs are 0.125-in thick and 24-in tall. Height in table includes leg height. Back panel assembly is aluminum.

Subcomponents: Yaskawa - GA700 AC Drive (GA70C2169BBA), Pacific Transformers - Transformer (42560), Wieland - Power Supply (wipos PS1 24-5), AC Infinity Inc. - Fan (LS1238A), Sprecher & Schuh - CA-9 Contactor (CA9-S1/2, CA9-265), Sprecher & Schuh - CA-7 Contactor (CA7-55), Sprecher & Schuh - L9 Circuit Breaker (L9-1/1/D, L9-2/1/D, L9-3/2/D, L9-2/3/C), Valley Contract Manufacturing Services - Alpha Printed Circuit Boards (AE02Y03, AE01Z03, AE01Y06, AE02X01, AE02Z03, AE11B01, AE02B01, AE01B04C), Blain - Pro-Hydro Interface Card (Pro-Hydro interface card), General Electric - LED Light Bar (U01/18/10/8/5/120), C.E. Electronics - CE Driver (AEC001-X), Wieland - Terminal Block (58.504.7055.0, 58.504.6955.1, 58.504.9255.0, 57.570.9055.0, 57.597.0155.0), Wieland - Relay (FLARE MOVE 24V-1W-6A, FLARE MOVE 115V-1W-6A, 80.063.5026.1), Finder - Relay (50.12.9.024.1000), Wieland - PCB Connector 8213 B (25.340.3253.0, 25.340.3353.0, 25.340.3453.0, 25.340.3553.0, 25.340.3653.0, 25.340.3853.0), WAGO - Splice Connector (221-412).

Testing notes: Back panel assembly was modified to add (1) additional 1/4-in bolt at the center of each vertical rail.