APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0643

OSHPD Special Seismic Certification Preapproval (OSP)

Type: [X] New [ ] Renewal

Manufacturer Information

Manufacturer: AMETEK Powervar

Manufacturer's Technical Representative: Peter Huss

Mailing Address: 1450 Lakeside Drive, Waukegan, IL 60085

Telephone: (847) 596-7040 Email: peter.huss@ametek.com

Product Information

Product Name: UPS and Batteries

Product Type: UPS

Product Model Number: Security Plus II UPS

General Description: 2-6kVA and 8-10kVA UPS systems with carbon steel enclosures. The enclosures contain fans, circuit boards, breakers, fuses, transformers, batteries, input plugs, and receptacles.

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: VMC Group

Contact Person: John Giuliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: john.giuliano@thevmcgroup.com

Title: President

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

Company Name: THE VMC GROUP

Name: Kenneth Tarlow California License Number: S2851

Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814

Telephone: (916) 449-9918 Email: ken.tarlow@thevmcgroup.com

Certification Method

☐ GR-63-Core ☒ ICC-ES AC156 ☐ IEEE 344 ☐ IEEE 693 ☐ NEBS 3

☐ Other (Please Specify):

Testing Laboratory

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)

Contact Person: Josh Sailer

Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431

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

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.44 (Sds = 2.0g, z/h = 1.0); 1.13 (Sds = 2.5g, z/h = 0.0)

S_{DS} (Design spectral response acceleration at short period, g) = 2.0 (z/h = 1.0), 2.5 (z/h = 0.0)

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 Attached

Overall dimensions and weight = See Attached

OSHPD Approval (For Office Use Only) - Approval Expires on 12/31/2025

Date: 10/13/2020

Name: Mohammad Aliaari Title: Senior Structural Engineer

Special Seismic Certification Valid Up to: S_{DS} (g) = See Above z/h = See Above

Condition of Approval (if applicable):

Table 1- Certified Components

Mounting Configuration: Rigid Base Mounted
Manufacturer: AMETEK Powervar
Product Type: Uninterruptable Power Supply (UPS)
Product Line: Security Plus II UPS
Seismic Levels: S_{DS} = 2.0g, z/h = 1.0; S_{DS} = 2.5g, z/h = 0.0

Model Number	Input-Output Voltage (VAC)	Load Power (kVA)	Max. Dimensions (in.)			Max. Weight (lb.)	Unit
			Length	Width	Height		
ABCDEF2002-11	120-100/120	2.0	28.3	9.8	32.5	302	Extrapolated[1]
ABCDEF3002-11	120-100/120	3.0	28.3	9.8	32.5	302	Extrapolated[1]
ABCDEF2002-22	208/240-200/240	2.0	28.3	9.8	32.5	302	UUT1[2]
ABCDEF3002-22	208/240-200/240	3.0	28.3	9.8	32.5	302-352	Interpolated
ABCDEF4002-22	208/240-104/240	4.0	28.3	9.8	32.5		Interpolated
ABCDEF5002-22	208/240-104/240	5.0	28.3	9.8	32.5		Interpolated
ABCDEF6002-22	208/240-104/240	6.0	28.3	9.8	32.5		Interpolated
ABCDEF8002-22	208/240-104/240	8.0	28.3	9.8	32.5		Interpolated
ABCDEF10.2-22	208/240-104/240	10.0	28.3	9.8	32.5	352	UUT2[2]

1. Extrapolated units are identical to UUT1. Extrapolated units differ by software only, as verified by the manufacturer.
2. UUT1 and UUT2 were tested with the maximum receptacle configurations.

Table 2- Certified Subcomponents

Mounting Configuration: Rigid Base Mounted
Manufacturer: AMETEK Powervar
Product Type: Uninterruptable Power Supply (UPS)
Product Line: Security Plus II UPS
Seismic Levels: S_{DS} = 2.0g, z/h = 1.0; S_{DS} = 2.5g, z/h = 0.0

Enclosures

Part Number	Manufacturer	Description	Material	Unit
SecurityPlusII-ENCLOSURE	Ametek Powervar	Dimensions: 28.3" L x 9.8" W x 32.5" H	Painted Carbon Steel	UUT1, UUT2

Fans

Part Number	Manufacturer	Description	Material	Unit
A37-00099	Ametek Powervar	Rear Fans for transformer (117CFM/230VAC)	Plastic	UUT1, UUT2
A37-00060		Rear Fans for SPS-CHARGER Board (55CFM/12VDC)		UUT1, UUT2
A37-00061		Rear Fans for 6k Main Board (70CFM/12VDC)		UUT1
A37-00062		Inside Fans for 10k Main Board (70CFM/12VDC)		UUT2
A37-00063		Rear Fans for 10k Main Board (72CFM/12VDC)		UUT2

Circuit Boards

Part Number	Manufacturer	Description	Material	Unit
A26-00311	Ametek Powervar	6k 10kVA Main Control PCB	Printed Circuit Board	UUT1, UUT2
A26-00311		6kVA Main Power PCB		UUT1
A26-00312		10kVA Main Power PCB		UUT2
A26-00319		EMI Filter PCB (6kVA)		UUT1
A26-00314		X/Y CAP BOARD (6/10kVA)		UUT1, UUT2
A26-00315		X BOARD (10kVA)		UUT2
A26-00316		EMI Filter PCB (10kVA)		UUT2
A26-00317		COMM PCB		UUT1, UUT2
A26-00308		Display PCB		UUT1, UUT2
A26-00318		SPS-CHARGER PCB		UUT1, UUT2

Breakers

Part Number	Manufacturer	Description	Material	Unit
A36-00295	Ametek Powervar	DC Breaker 500V, 50A, 2 pole	Plastic and Copper Alloy	UUT1, UUT2
A50-00042		Maintenance Bypass Switch		UUT1, UUT2
A36-00296		Input Breaker (6 kVA) 40A/400VAC		UUT1
A36-00297		Input Breaker (10 kVA) 63A/400VAC		UUT2

Fuses

Part Number	Manufacturer	Description	Material	Unit
A35-00095	Ametek Powervar	Battery Fuses (500VDC/20A)	Copper, Fiberglass, Ceramic	UUT1
A35-00096		Battery Fuses (500VDC/30A)		UUT2

Transformers

Part Number	Manufacturer	Description	Material	Unit
41-040363-01G	Voltronic Power	6kVA / 208-240V/ 25A Dry Type Transformer	Iron	UUT1
41-040364-01G	Voltronic Power	10kVA / 208-240V/ 41.7A Dry Type Transformer		UUT2

Batteries

Part Number	Manufacturer	Description	Material	Unit
A14-00015	CSB	12V 460W sealed VRLA non-spillable battery	Lead Acid with ABS (UL 94-HB) Container	UUT1, UUT2

Input Plug

Part Number	Manufacturer	Description	Material	Unit
LP-30P	Ametek Powervar	10' Input Line Cord 3/c #10 AWG Type SOOW Cord	Plastic	UUT1, UUT2

Receptacles

Part Number	Manufacturer	Description	Material	Unit
L6-30R	Ametek Powervar	Rear Panel Top Row Receptacle	Plastic	UUT1, UUT2
5-20R	Ametek Powervar	Rear Panel Bottom Row Duplex Receptacles	Plastic	UUT1, UUT2

Table 3- Tested Units

Mounting Configuration: Rigid Base Mounted
Manufacturer: AMETEK Powervar
Product Type: Uninterruptable Power Supply (UPS)
Product Line: Security Plus II UPS
Seismic Levels: S_{DS} = 2.0g, z/h = 1.0; S_{DS} = 2.5g, z/h = 0.0

Model Number	Input-Output Voltage (VAC)	Load Power (kVA)	Max. Dimensions (in.)			Max. Weight (lb.)	Unit
			Length	Width	Height		
ABCDEF2002-22	208/240-200/240	2.0	28.3	9.8	32.5	302	UUT1
ABCDEF10.2-22	208/240-104/240	10.0	28.3	9.8	32.5	352	UUT2

UNIT UNDER TEST - Summary Sheet

UUT1

Manufacturer: AMETEK Powervar

Product Type: Uninterruptable Power Supply

Product Line: 2kVA Security Plus II UPS

Model Number: ABCDEF2002-22

Mounting: Rigid Base Mount

Product Construction Summary: Painted Carbon Steel

Options / Subcomponent Summary: Enclosures, Fans, Circuit Boards, Fuses, Breakers, Transformers, Batteries, Input Plugs, Receptacles

Unit Mounting Description:

UUT1 was rigidly base mounted to the shake table interface plate using the manufacturer's designed mounting brackets. The carbon steel brackets were mounted to UUT1 through the manufacturer's bolt-hole locations using (12) M4-0.7x14mm Zinc-plated machine screws, star washers, and round washers. The screws were spaced 7.75 inches vertically, and 22.5 inches horizontally. Four screws were used to mount the brackets at the base of UUT1 and were spaced 11 inches horizontally. The mounting brackets were mounted directly to the shake table interface plate using (8) 5/16" Grade 5 bolts, round washers and 1.5"x1.5"x0.25" Carbon Steel square washers. The bolts used for the rear mounting brackets were spaced 6 inches apart length-wise and 12.5 inches width-wise, while the bolts used for the front mounting brackets were spaced 9 inches apart length-wise, and 12.5 inches width-wise. In addition, two 1" wide x 8' long straps were used to secure UUT1 to the mounting brackets. The straps are manufactured by Strapworks (Model Number: CS1H8PB) and are constructed of heavyweight polypropylene webbing.

Seismic Mounting Brackets:

The manufacturer's seismic mounting brackets are constructed of carbon steel and consist of four brackets per each UUT. The front mounting brackets measure 12" length-wise and 15.5" height-wise. The rear mounting brackets measure 9" length-wise and 15.5" height-wise. A 3" flange on both the front and rear mounting brackets consist of the 3/8" holes that allow the brackets to be mounted to the shake table interface plate.

The AMETEK Powervar model numbers for the Seismic Mounting Brackets are as follows:

Front Left Bracket: A05-00995

Front Right Bracket: A05-00996

Rear Left Bracket: A05-00997

Rear Right Bracket: A05-00998

UUT Properties

UUT1	Operating Weight (lb.)	Dimensions (in.)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	302	28.3	9.8	32.5	>33.3	20.0	33.0

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	N/A	N/A
		2.50	0.0	1.5	N/A	N/A	1.67	0.67

Figure 1. Side view of UUT1

Figure 2. Front view of UUT1

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 were maintained.

UNIT UNDER TEST - Summary Sheet

UUT2

Manufacturer: AMETEK Powervar

Product Type: Uninterruptable Power Supply

Product Line: 10kVA Security Plus II UPS

Model Number: ABCDEF10.22-22

Mounting: Rigid Base Mount

Product Construction Summary: Painted Carbon Steel

Options / Subcomponent Summary: Enclosures, Fans, Circuit Boards, Fuses, Breakers, Transformers, Batteries, Input Plugs, Receptacles

Unit Mounting Description:

UUT2 was rigidly base mounted to the shake table interface plate using the manufacturer's designed mounting brackets. The carbon steel brackets were mounted to UUT2 through the manufacturer's bolt-hole locations using (12) M4-0.7x14mm Zinc-plated machine screws, star washers, and round washers. The screws were spaced 7.75 inches vertically, and 22.5 inches horizontally. Four screws were used to mount the brackets at the base of UUT2 and were spaced 11 inches horizontally. The mounting brackets were mounted directly to the shake table interface plate using (8) 5/16" Grade 5 bolts, round washers and 1.5"x1.5"x0.25" Carbon Steel square washers. The bolts used for the rear mounting brackets were spaced 6 inches apart length-wise and 12.5 inches width-wise, while the bolts used for the front mounting brackets were spaced 9 inches apart length-wise, and 12.5 inches width-wise. In addition, two 1" wide x 8' long straps were used to secure UUT2 to the mounting brackets. The straps are manufactured by Strapworks (Model Number: CS1H8PB) and are constructed of heavyweight polypropylene webbing.

Seismic Mounting Brackets:

The manufacturer's seismic mounting brackets are constructed of carbon steel and consist of four brackets per each UUT. The front mounting brackets measure 12" length-wise and 15.5" height-wise. The rear mounting brackets measure 9" length-wise and 15.5" height-wise. A 3" flange on both the front and rear mounting brackets consist of the 3/8" holes that allow the brackets to be mounted to the shake table interface plate.

The AMETEK Powervar model numbers for the Seismic Mounting Brackets are as follows:

Front Left Bracket: A05-00995

Front Right Bracket: A05-00996

Rear Left Bracket: A05-00997

Rear Right Bracket: A05-00998

UUT Properties

UUT2	Operating Weight (lb.)	Dimensions (in.)			Lowest Natural Frequency (Hz)		
		Depth	Width	Height	Front-Back	Side-Side	Vertical
	352	28.3	9.8	32.5	>33.3	13.0	>33.3

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	N/A	N/A
		2.50	0.0	1.5	N/A	N/A	1.67	0.67

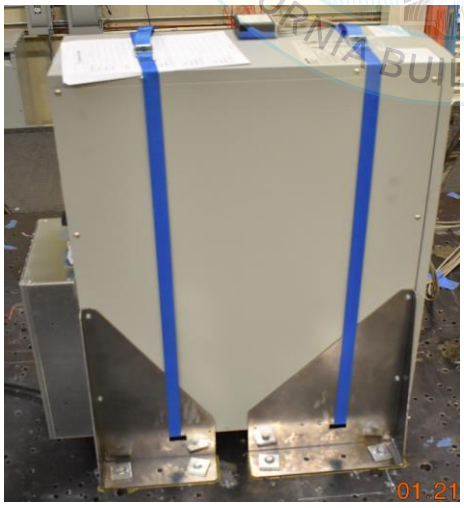

Figure 1. Side view of UUT2

Figure 2. Front view of UUT2

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 were maintained.