APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0136

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Hammond Power Solutions, Inc.

Manufacturer's Technical Representative: James Luhta

Mailing Address: 595 Southgate Drive, Guelph, ON N1G3W6

Telephone: (519) 822-2441 Email: jluhta@hammondpowersolutions.com

Product Information

Product Name: Transformers

Product Type: Transformers – Dry Type

Product Model Number: Varies (See Attachment)

General Description: Product lines include a range of kVA ratings from 0.025 kVA – 3,750 kVA. 1-3 Phase Transformers.

Mounting Description: Rigid, Floor/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: Galen Reid

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

Telephone: (541) 604-7225 Email: greid@structint.com

Title: Director, TRU Compliance

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: CLARK TESTING LABORATORY, INC.

Contact Person: Davon Lohr

Mailing Address: 1801 Route 51, Jefferson Hills PA 15025

Telephone: (412) 387-1001 Email: dlohr@clarktesting.com

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)

Contact Person: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513

Telephone: (972) 247-9657 Email: Jeremy@etldallas.com

Company Name: Pacific Earthquake Engineering Research Center (PEER)

Contact Person: Amarnath Kasalanati

Mailing Address: 1301 South 46th St., Bldg. 420, Richmond CA 94720-1729

Telephone: (510) 642-3437 Email: Amarnath1@berkeley.edu

Company Name: UNIVERSITY OF BUFFALO (SEESL)

Contact Person: Mark Pitman

Mailing Address: 212 Ketter Hall, Buffalo NY 14260

Telephone: (716) 645-4377 Email: mpitman@buffalo.edu

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.44 (z/h = 1); 0.90 (z/h = 0)

S_{DS} (Design spectral response acceleration at short period, g) = 2.00

a_p (Amplification factor) = 1

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 11/22/2028

Date: 11/22/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.00 z/h = See Above

Condition of Approval (if applicable):

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

2100426-CR-001-R3

TRU COMPLIANCE

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type E Transformers

TABLE 1

Certified Product Construction Summary:
NEMA 1 Ventilated Carbon Steel Enclosure.

Certified Options Summary:
1 Phase. General purpose enclosed transformer (FusionTM). Octogonal wound core (OWC) copper windings.
Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:
Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Fusion™ (FS Model: 1PH)	0.025 kVA	5.9	2.7	3.3	3.0	*UUT: 1PH, Cu*	1
	0.05 kVA	6.1	2.9	3.5	3.4		Interp.
	0.10 kVA	6.3	3.1	3.6	3.9		Interp.
	0.15 kVA	6.9	3.1	3.6	5.2		Interp.
	0.25 kVA	6.6	3.9	4.3	7.7		Interp.
	0.35 kVA	7.2	3.9	4.3	9.4		Interp.
	0.50 kVA	7.2	4.6	4.6	13.0		Interp.
	0.75 kVA	7.2	5.6	5.1	18.0		Interp.
	1.0 kVA	8.0	5.6	5.1	23.0		Interp.
	1.5 kVA	8.5	6.6	6.0	31.0		Interp.
	2.0 kVA	9.1	6.6	6.0	38.0		Interp.
	3.0 kVA	11.7	7.8	6.7	69.0		Interp.
	5.0 kVA	13.4	8.0	7.1	91.0		Interp.
	7.5 kVA	15.1	9.3	8.0	104.0	*UUT: 1PH, Cu*	2

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

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TRU COMPLIANCE

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F and K Transformers (VPI Construction)

TABLE 2.1

Certified Product Construction Summary:
NEMA 3R Ventilated Carbon Steel Enclosure for Sentinel and Millenium.
NEMA1 Ventilated Carbon Steel Enclosure for Type F & K (Custom Voltage)

Certified Options Summary:
NMF: 1 Phase. NMK: 3 Phase. MV1S: 1PH. MV3S: 3 Phase. Energy efficient general purpose (SentinelTM). General purpose medium voltage distribution (MilleniumTM). Vacuum Pressure Impregnated (VPI). Copper and aluminum windings. 600V Class - 34.5 kV Class. Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:
Base 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}= ***2.0 g z/h=1.0*** S_{DS}= ***2.0 g z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Sentinel™ (NMF & NMK) HPS Millenium™ (MV1S & MV3S)	15 kVA	20.1	21.5	22.0	160	*UUT: 3PH, Cu*	17
	15 kVA	20.2	19.4	21.5	185	*UUT: 1PH, Al*	5
	25 kVA	25.8	23.8	28.8	220		Interp.
	30 kVA	25.8	23.8	28.8	445		Interp.
	45 kVA	25.8	23.8	28.8	430	*UUTs: 3PH, Al/Cu*	20, 23
	50 kVA	25.0	26.0	38.0	370		Interp.
	60 kVA	22.5	23.3	28.8	469		Interp.
	75 kVA	29.5	32.0	41.0	830		Interp.
	100 kVA	29.5	32.0	41.0	650		Interp.
	112 kVA	26.0	28.3	36.0	451		Interp.
	150 kVA	34.0	39.5	51.5	1,500		Interp.
	167 kVA	32.5	32.0	50.0	900		Interp.
	225 kVA	31.5	29.0	44.5	1,656		Interp.
	300 kVA	34.0	39.5	51.5	1,900		Interp.
	500 kVA	38.4	48.5	59.0	2,900		Interp.
	750 kVA	43.4	51.5	66.0	4,150		Interp.
	1,000 kVA	44.4	64.0	71.0	5,450		Interp.
	1,250 kVA	44.4	64.0	71.0	6,150		Interp.
	1,500 kVA	51.4	64.0	75.0	6,600	*UUT: 3PH, Al/Cu*	6
Type F and K (Custom Voltage)	15 kVA	20.2	19.4	21.5	185		Interp.
	...	..	...	...	...		Interp.
	300 kVA	76.0	50.0	74.1	3,870	*UUT: 3PH, Al/Cu*	9
	...	...	...	...	...		Interp.
	3,750 kVA	125.0	72.0	111.0	16,595	*UUT: 3PH, Al/Cu*	10

****Type F and K are similar to Sentinel and Millenium but allow for possible custom kVA ratings***

SPECIAL SEISMIC CERTIFICATION
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TRU COMPLIANCE

Manufacturer:	Hammond Power Solutions, Inc.	**TABLE 2.2**
Model Line:	Type F and K Transformers (VPI Construction)	

Certified Product Construction Summary:

NEMA 3R and NEMA1 Ventilated Carbon Steel Enclosure.

Certified Options Summary:

1 and 3 Phase. Energy efficient general purpose (SentinelTM). General purpose medium voltage distribution (MilleniumTM). Vacuum Pressure Impregnated (VPI). Cu and Al windings. 600V Class - 34.5 kV Class. Transforms branded as: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:

Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Sentinel™ HPS Millenium™ HPS Tribune™ (NEMA 3R)	15 kVA	20.1	21.5	22.0	160		Interp.
	25 kVA	23.8	22.3	26.7	220		Interp.
	30 kVA	23.8	25.8	28.8	445		Interp.
	45 kVA	25.8	23.8	28.8	430		Interp.
	50 kVA	23.8	25.8	28.8	370		Interp.
	60 kVA	25.0	26.0	38.0	468		Interp.
	75 kVA	27.0	28.3	36.0	830		Interp.
	100 kVA	27.0	28.3	36.0	815		Interp.
	112 kVA	26.0	28.3	36.0	451	*UUT: 3PH, Al/Cu*	26
	150 kVA	29.5	32.0	41.0	1,700		Interp.
	167 kVA	29.5	32.0	41.0	975		Interp.
	225 kVA	31.5	29.0	44.5	1,656	*UUT: 3PH, Al/Cu*	25
	300 kVA	34.0	37.5	52.0	2,350		Interp.
	500 kVA	41.5	49.0	64.0	4,700		Interp.
	750 kVA	46.5	54.0	72.0	5,800		Interp.
	1,000 kVA	49.5	60.0	82.0	7,200		Interp.
	1,250 kVA	49.5	68.0	82.0	8,500		Interp.
	1,500 kVA	54.5	78.0	87.0	9,690	*UUT: 3PH, Al/Cu*	24
Type F and K (Custom Voltage, T-Frame Welded Construction) (NEMA 3R<= 300 kVA) (NEMA 1 > 300 - 3750 kVA)	15 kVA	20.1	21.5	21.9	185		Interp.
	60 kVA	22.5	23.3	28.8	469	*UUT: 3PH, Al/Cu*	29
	163 kVA	29.5	31.5	44.5	996	*UUT: 3PH, Al/Cu*	27
	200 kVA	29.5	31.5	44.5	984	*UUT: 3PH, Al/Cu*	28
	...	..	...	...	...		Interp.
	300 kVA	76.0	50.0	74.1	3,870	*UUT: 3PH, Al/Cu*	9
	...	...	...	...	...		Interp.
	3,750 kVA	72.0	126.0	110.0	37,860	*UUT: 3PH, Al/Cu*	10

[1] Single Phase Only. [2] Type F and K are similar to Sentinel and Millenium but allow for possible custom kVA ratings.

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

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TRU COMPLIANCE

Manufacturer:	Hammond Power Solutions, Inc.	**TABLE 2.2**
Model Line:	Type F and K Transformers (VPI Construction)	

Certified Product Construction Summary:

NEMA 3R and NEMA1 Ventilated Carbon Steel Enclosure.

Certified Options Summary:

1 and 3 Phase. Energy efficient general purpose (SentinelTM). General purpose medium voltage distribution (MilleniumTM). Vacuum Pressure Impregnated (VPI). Cu and Al windings. 600V Class - 34.5 kV Class. Transforms branded as: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:

Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
Type F and K (Custom Voltage, A-Frame Bolted Construction) (NEMA 1)	300 kVA	62.0	90.0	92.5	5,413	*UUT: 3PH, Al/Cu*	31
	...	...	...	...	...		Interp.
	3,750 kVA	74.0	126.0	111.5	23,325	*UUT: 3PH, Al/Cu*	32

[1] Single Phase Only. [2] Type F and K are similar to Sentinel and Millenium but allow for possible custom kVA ratings.

SPECIAL SEISMIC CERTIFICATION
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TRU COMPLIANCE

Manufacturer:	Hammond Power Solutions, Inc.	**TABLE 2.3**
Model Line:	Type F and K Transformers (VPI Construction)	

Certified Product Construction Summary:

NEMA 3R Ventilated Carbon Steel Enclosure.

Certified Options Summary:

NMK: 3 Phase. Energy efficient general purpose (SentinelTM). Vacuum Pressure Impregnated (VPI). Copper and aluminum windings. 600V Class - 34.5 kV Class.

Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

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}= ***2.0 g z/h=1.0*** S_{DS}= ***2.0 g z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Sentinel™	15 kVA	21.5	20.1	22.0	160	*UUT: 3PH, Cu*	19
	25 kVA	25.8	23.8	28.8	220		Interp.
	30 kVA	25.8	23.8	28.8	370		Interp.
	45 kVA	25.8	23.8	28.8	430	*UUT: 3PH, Al/Cu*	18
	75 kVA	25.8	23.8	28.8	450		Interp.
	112 kVA	26.0	28.3	56.0	451	*UUT: 3PH, Al/Cu*	30

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

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TABLE 3

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type CF and CK (Cast Resin Construction)

Certified Product Construction Summary:
NEMA 1 Carbon Steel Enclosure.

Certified Options Summary:
3 Phase Cast Resin construction with inner and outer winding. Reactor (R) construction has an inner winding only. Inner and outer windings are Copper and/or Aluminum. Inside low voltage coil: Cast Resin or VPI construction. 5kV to 34.5kV Class. With or without coordinated bus and enclosure. Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:
Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS EnduraCoil™ Cast Transformer: CF, CK Cast Reactor: CFR, CFK	300 kVA	50.0	76.0	74.1	3,870	*UUT: 3PH , Al/Cu*	9
		54.0	90.0	91.5	3,750		Interp.
		60.0	90.0	91.5	4,150		Interp.
	500 kVA	54.0	70.0	91.5	4,600		Interp.
		54.0	90.0	91.5	4,900		Interp.
		60.0	90.0	91.5	5,400		Interp.
	750 kVA	54.0	70.0	91.5	5,600		Interp.
		54.0	90.0	91.5	6,000		Interp.
		60.0	105.0	91.5	6,600		Interp.
	1,000 kVA	60.0	90.0	91.5	6,700		Interp.
		60.0	90.0	91.5	7,200		Interp.
		60.0	105.0	91.5	7,900		Interp.
	1,500 kVA	60.0	90.0	91.5	9,400		Interp.
		60.0	90.0	91.5	10,100		Interp.
		72.0	105.0	91.5	11,100		Interp.
	2,000 kVA	60.0	105.0	91.5	11,900		Interp.
		60.0	105.0	91.5	12,700		Interp.
		72.0	110.0	91.5	14,000		Interp.
	2,500 kVA	60.0	105.0	110.0	13,100		Interp.
		60.0	105.0	110.0	14,000		Interp.
		72.0	105.0	110.0	15,400		Interp.
	3,000 kVA	60.0	105.0	110.0	13,750		Interp.
		60.0	110.0	110.0	14,700		Interp.
		72.0	110.0	110.0	16,200		Interp.

SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

2100426-CR-001-R3

TRU COMPLIANCE

Manufacturer:	Hammond Power Solutions, Inc.	**TABLE 3**
Model Line:	Type CF and CK (Cast Resin Construction)	

Certified Product Construction Summary:

NEMA 1 Carbon Steel Enclosure.

Certified Options Summary:

3 Phase Cast Resin construction with inner and outer winding. Reactor (R) construction has an inner winding only. Inner and outer windings are Copper and/or Aluminum. Inside low voltage coil: Cast Resin or VPI construction. 5kV to 34.5kV Class. With or without coordinated bus and enclosure. Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:

Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS EnduraCoil™ Cast Transformer: CF, CK Cast Reactor: CFR, CFK	3,500 kVA	60.0	110.0	110.0	14,700		Interp.
		72.0	110.0	110.0	15,700		Interp.
		72.0	125.0	110.0	17,300		Interp.
	3,750 kVA	60.0	110.0	110.0	14,400		Interp.
		72.0	110.0	110.0	15,400		Interp.
		72.0	125.0	111.0	16,595	*UUT: 3PH , Al/Cu*	10
HPS EnduraCoil™ Cast Transformer: CF, CK Cast Reactor: CFR, CFK (Custom Voltage, T-Frame Welded Construction)	112.5 kVA	34.0	40.0	52.0	2,000		Extrap.
	…	…	…	…	…		Extrap.
	300 kVA	64.0	50.0	71.0	3,500		Extrap.
	…	…	…	…	…		Extrap.
	300 kVA	50.0	76.0	74.1	3,870	*UUT: 3PH , Al/Cu*	9
	…	…	…	…	…		Interp.
	3,750 kVA	72.0	125.0	111.0	16,595	*UUT: 3PH , Al/Cu*	10
HPS EnduraCoilTM Cast Transformer: CF, CK Cast Reactor: CFR, CFK (Custom Voltage, A-Frame Bolted Construction)	300 kVA	62.0	90.0	92.5	5,412	*UUT: 3PH, Al/Cu*	31
	…	…	…	…	…		Interp.
	3,750 kVA	74.0	126.0	111.5	23,325	*UUT: 3PH, Al/Cu*	32

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

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TRU COMPLIANCE

Manufacturer:	Hammond Power Solutions, Inc.
Model Line:	Type PH and 3AH Transformers

TABLE 4

Certified Product Construction Summary:

Non-enclosed. Copper winding. 1 Phase

Certified Options Summary:

Open style core and coil (SpantanTM) with Octogonal wound core (OWC) winding construction. Machine tool industrial control transformer (ImperatorTM) with enclosed OWC construction.

Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:

Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Spartan™ (SP Models) HPS Imperator™ (PH Models)	0.025 kVA	3.0	4.4	3.2	3.5	*UUT: 1PH , Cu*	3
	0.05 kVA	3.0	4.1	3.3	3.5		Interp.
	0.075 kVA	3.3	3.9	3.6	3.5		Interp.
	0.1 kVA	3.3	4.2	3.6	4.5		Interp.
	0.15 kVA	4.0	4.9	3.8	5.7		Interp.
	0.25 kVA	4.5	5.4	3.8	7.5		Interp.
	0.35 kVA	4.5	5.2	4.4	10		Interp.
	0.5 kVA	4.8	5.9	4.3	14		Interp.
	0.75 kVA	4.1	6.7	4.3	17		Interp.
	1 kVA	5.3	6.8	4.9	24		Interp.
	1.5 kVA	5.3	8.2	4.9	32		Interp.
	2 kVA	6.4	5.9	5.3	35		Interp.
	3 kVA	7.5	7.5	6.5	64		Interp.
	5 kVA	8.3	8.8	7.1	97		Interp.
	7.5 kVA	9.0	9.9	7.8	104	*UUT: 1PH , Cu*	4

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

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TRU COMPLIANCE

Manufacturer:	Hammond Power Solutions, Inc.
Model Line:	Type Q and QT Transformers

TABLE 5

Certified Product Construction Summary:

NEMA 3R, NEMA 4 or NEMA 12 Non-ventilated Carbon Steel Enclosure. Copper winding.

Certified Options Summary:

1 and 3 Phase. Industrial encapsulated winding construction (TitanTM)
HPS Universal is identical in construction to Titan, but only available up to 5 kVA
Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:

Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Titan™ HPS Universal™ (Q models: 1PH) (P models: 3PH)	0.05 kVA	5.3	3.8	7.3	6	*UUT: 1PH, Cu*	7
	...	...	...	...	...		Interp.
	0.5 kVA	4.8	5.0	9.3	15		Interp.
	0.75 kVA	4.8	5.0	9.3	18		Interp.
	1 kVA	5.5	5.9	10.0	22		Interp.
	1.5 kVA	5.5	5.9	10.0	25		Interp.
	2 kVA	6.5	12.4	11.3	49		Interp.
	3 kVA	6.5	12.4	11.3	68		Interp.
	5 kVA	7.8	10.0	17.3	90		Interp.
	6 kVA	6.9	15.2	15.1	146		Interp.
	7.5 kVA	7.8	10.0	17.3	115		Interp.
	9 kVA	10.3	16.6	16.6	211		Interp.
	10 kVA	9.3	12.3	20.9	165		Interp.
	15 kVA	10.4	19.3	16.6	270		Interp.
	30 kVA	13.0	20.3	23.4	555		Interp.
	45 kVA	13.0	22.3	28.4	765		Interp.
	75 kVA	16.0	31.3	29.9	1,600		Interp.
	112.5 kVA	26.0	38.5	39.1	2,100		Interp.
	150 kVA	26.0	38.5	39.1	2,450	*UUT: 3PH, Cu*	8

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

2100426-CR-001-R3

TRU COMPLIANCE

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Encapsulated Transformers

TABLE 6.1

Certified Product Construction Summary:
NEMA 4 Carbon Steel Enclosure. Copper or Aluminum windings.

Certified Options Summary:
3 Phase. Industrial encapsulated winding construction (TitanTM)
Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:
Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Titan N ™ 3 Phase	2 kVA	8.8	12.3	13.2	75	*UUT: 3PH, Cu*	13
	3 kVA	8.8	12.3	13.2	85		Interp.
	6 kVA	9.6	14.8	15.2	152		Interp.
	9 kVA	11.6	17.5	14.4	225		Interp.
	15 kVA	14.0	21.3	17.0	295	*UUT: 3PH, Al/Cu*	12
	30 kVA	16.5	23.8	21.8	470	*UUT: 3PH,Cu*	15
	45 kVA	17.7	25.1	21.8	735		Interp.
	75 kVA	20.4	31.3	25.6	1,445		Interp.
	90 kVA	26.0	35.1	26.8	1,600	*UUT: 3PH, Cu*	21
	112.5 kVA	26.0	38.5	39.1	2,100		Interp.
	150 kVA	27.0	43.0	36.0	3,520	*UUT: 3PH, Al /Cu*	16

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

2100426-CR-001-R3

TRU COMPLIANCE

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Encapsulated Transformers

TABLE 6.2

Certified Product Construction Summary:
NEMA 4 Carbon Steel Enclosure. Copper or Aluminum windings.

Certified Options Summary:
3 Phase. Industrial encapsulated winding construction (TitanTM)
Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Titan N ™ 3 Phase	2 kVA	8.8	12.3	13.2	75	UUT: 3PH, Cu	11
	3 kVA	8.8	12.3	13.2	85		Interp.
	6 kVA	6.9	15.2	15.1	152		Interp.
	9 kVA	10.3	16.6	16.6	225		Interp.
	15 kVA	14.1	21.3	17.0	295	UUT: 3PH, Al/Cu	14
	30 kVA	16.5	23.8	21.8	470	UUT: 3PH, Cu	22

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

2100426-CR-001-R3

TRU COMPLIANCE

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Encapsulated Transformers

TABLE 7.1

Certified Product Construction Summary:
NEMA 4 Carbon Steel Enclosure. Copper or Aluminum windings.

Certified Options Summary:
3 Phase. Industrial encapsulated winding construction (TitanTM)
Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

Mounting Configuration:
Base 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}= ***2.0 g*** ***z/h=1.0*** S_{DS}= ***2.0 g*** ***z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Titan X ™ 3 Phase	2 kVA	8.8	12.3	13.2	75	UUT: 3PH, Cu	13
	3 kVA	8.8	12.3	13.2	85		Interp.
	6 kVA	9.6	14.8	15.2	152		Interp.
	9 kVA	11.6	17.5	14.4	225		Interp.
	15 kVA	14.0	21.3	17.0	295	UUT: 3PH, Al/Cu	12
	30 kVA	16.5	23.8	21.8	470	UUT: 3PH, Cu	15
	45 kVA	17.7	25.1	21.8	735		Interp.
	75 kVA	20.4	31.3	25.6	1,445		Interp.
	90 kVA	26.0	35.1	26.8	1,600	UUT: 3PH, Cu	21
	112.5 kVA	26.0	38.5	39.1	2,100		Interp.
	150 kVA	27.0	43.0	36.0	3,520	UUT: 3PH, Al/Cu	16

SPECIAL SEISMIC CERTIFICATION
CERTIFIED COMPONENT MATRIX

2100426-CR-001-R3

TRU COMPLIANCE

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Encapsulated Transformers

TABLE 7.2

Certified Product Construction Summary:
NEMA 4 carbon steel enclosure. Copper or Aluminum windings.

Certified Options Summary:
3 Phase. Industrial encapsulated winding construction (TitanTM)
Transformer brand name options: Hammond Power Solutions, Inc., Eaton, Square-D Company/Schneider Electric, Siemens Energy and Automation, GE.

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}= ***2.0 g z/h=1.0*** S_{DS}= ***2.0 g z/h=0.0*** I_P= ***1.5***

Model Line	Model	Dimensions (in)			Weight (lb)	Notes	UUT
		Depth	Width	Height			
HPS Titan X ™ 3 Phase	2 kVA	8.8	12.3	13.2	75	UUT: 3PH, Cu	11
	3 kVA	8.8	12.3	13.2	85		Interp.
	6 kVA	6.9	15.2	15.1	152		Interp.
	9 kVA	10.3	16.6	16.6	225		Interp.
	15 kVA	14.1	21.3	17.0	295	UUT: 3PH, Al/Cu	14
	30 kVA	17.0	23.8	21.8	470	UUT: 3PH, Cu	22

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

Manufacturer: Hammond Power Solutions, Inc.

Model Line: Transformer Product Families

UUT	Unit Description (Mounting)	Report Number (UUT #)	Testing Lab	Year Tested	ISO 17025 Accredited?	S_{DS}	z/h	I_P
1	Type E (Fusion) 0.025 kVA 1 Phase (Base Mounted)	EL: 9410 (UUT 1)	Clark Dynamic Test Laboratory, Inc.	2010	Yes	2.0	1.0	1.5
2	Type E (Fusion) 7.5 kVA 1 Phase (Base Mounted)	EL: 9410 (UUT 2)	Clark Dynamic Test Laboratory, Inc.	2010	Yes	2.0	1.0	1.5
3	Type PH & 3AH (Spartan) 0.025 kVA 1 Phase (Base Mounted)	EL: 9405 (UUT 3)	Clark Dynamic Test Laboratory, Inc.	2010	Yes	2.0	1.0	1.5
4	Type PH & 3AH (Imperator) 7.5 kVA 1 Phase (Base Mounted)	EL: 9405 (UUT 4)	Clark Dynamic Test Laboratory, Inc.	2010	Yes	2.0	1.0	1.5
5	Type F & K (Sentinel) 15 kVA 1 Phase (Base Mounted)	EL: 9504 (UUT 5)	Clark Dynamic Test Laboratory, Inc.	2011	Yes	2.0	1.0	1.5
6	Type F & K (Millenium) 1,500 kVA 3 Phase (Base Mounted)	EL: 9504 (UUT 6)	Clark Dynamic Test Laboratory, Inc.	2011	Yes	2.0	1.0	1.5
7	Type Q & QT (Titan) 0.05 kVA 1 Phase (Base Mounted)	EL: 9411 (UUT 7)	Clark Dynamic Test Laboratory, Inc.	2010	Yes	2.0	1.0	1.5
8	Type Q & QT (Titan) 150 kVA 3 Phase (Base Mounted)	EL: 9411 (UUT 8)	Clark Dynamic Test Laboratory, Inc.	2010	Yes	2.0	1.0	1.5
9	Type F and K (Cast Resin) 300 kVA 3 Phase (Base Mounted)	13534, Rev.2 (UUT 9)	Environmental Testing Laboratory (ETL)	2014	Yes	2.0	1.0	1.5
10	Type F and K (Cast Resin) 3,750 kVA 3 Phase (Base Mounted)	13534, Rev.2 (UUT 10)	Environmental Testing Laboratory (ETL)	2014	Yes	2.0	1.0	1.5
11	2kVA DQT1 (Titan) (Wall Mounted)	1800840-TR-001 R0 (UUT 11)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5

Notes:

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

Manufacturer: Hammond Power Solutions, Inc.

Model Line: Transformer Product Families

UUT	Unit Description (Mounting)	Report Number (UUT #)	Testing Lab	Year Tested	ISO 17025 Accredited?	S_{DS}	z/h	I_P
12	15kVA DQT4 (Titan) (Base Mounted)	1800840-TR-001 R0 (UUT 12)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
13	2kVA DQT1 (Titan) (Base Mounted)	1800840-TR-001 R0 (UUT 13)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
14	15kVA DQT4 (Titan) (Wall Mounted)	1800840-TR-001 R0 (UUT 14)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
15	30kVA DQT5 (Titan) (Base Mounted)	1800840-TR-001 R0 (UUT 15)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
16	150kVA DQT10 (Titan) (Base Mounted)	1800840-TR-001 R0 (UUT 16)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
17	15kVA DH1 (Sentinel) (Base Mounted)	1800840-TR-001 R0 (UUT 17)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
18	45kVA DH2 (Sentinel) (Wall Mounted)	1800840-TR-001 R0 (UUT 18)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
19	15kVA DH1 (Sentinel) (Wall Mounted)	1800840-TR-001 R0 (UUT 19)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
20	45kVA DH2 (Sentinel) (Base Mounted)	1800840-TR-001 R0 (UUT 20)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
21	90 kVA DQTXX (Titan) (Base Mounted)	1800840-TR-001 R0 (UUT 21)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
22	30kVA DQT5 (Titan) (Base & Wall Mounted)	1800840-TR-001 R0 (UUT 22)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5

Notes:

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

Manufacturer: Hammond Power Solutions, Inc.

Model Line: Transformer Product Families

UUT	Unit Description (Mounting)	Report Number (UUT #)	Testing Lab	Year Tested	ISO 17025 Accredited?	S_{DS}	z/h	I_P
23	45kVA DH2 (Sentinel) (Base Mounted)	1800840-TR-001 R0 (UUT 23)	Structural and Earthquake Engineering and Simulation Laboratory (SEESL)	2018	Yes	2.0	1.0	1.5
24	1500kVA DH10 (Sentinel) (Base Mounted)	JID 21-01539 Rev.1 (UUT 1)	Clark Dynamic Test Laboratory, Inc.	2021	Yes	2.0	1.0	1.5
25	225kVA DH4 (Sentinel) (Base Mounted)	2100426-TR-001-R0 (UUT 2)	Pacific Earthquake Engineering Research Center (PEER)	2021	No[1]	2.0	1.0	1.5
26	112kVA DH3 (Sentinel) (Base Mounted)	2100426-TR-001-R0 (UUT 3)	Pacific Earthquake Engineering Research Center (PEER)	2021	No[1]	2.0	1.0	1.5
27	163kVA DH4 (Sentinel) (Base Mounted)	2100426-TR-001-R0 (UUT 15)	Pacific Earthquake Engineering Research Center (PEER)	2021	No[1]	2.0	1.0	1.5
28	200kVA DH4 (Sentinel) (Base Mounted)	2100426-TR-001-R0 (UUT 16)	Pacific Earthquake Engineering Research Center (PEER)	2021	No[1]	2.0	1.0	1.5
29	60kVA DH2 (Sentinel) (Base Mounted)	2100426-TR-001-R0 (UUT 17)	Pacific Earthquake Engineering Research Center (PEER)	2021	No[1]	2.0	1.0	1.5
30	112kVA DH3 (Sentinel) (Wall Mounted)	2100426-TR-001-R0 (UUT 18)	Pacific Earthquake Engineering Research Center (PEER)	2021	No[1]	2.0	1.0	1.5
31	Type F & K/CF & CK Hybrid 300 kVA 3 Phase (Base Mounted)	2100426-TR-002-R0 (UUT 31)	Pacific Earthquake Engineering Research Center (PEER)	2022	Yes	2.0	1.0	1.5
32	Type F & K/CF & CK Hybrid 3750 kVA 3 Phase (Base Mounted)	2100426-TR-002-R0 (UUT 32A)	Pacific Earthquake Engineering Research Center (PEER)	2022	Yes	2.0	1.0	1.5

Notes:

1. PEER was not ISO 17025 accredited at the time of testing but has been reviewed by TRU Compliance and found to meet the requirements for ICC-ES AC156 testing. Review form is on file with TRU Compliance.

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 1

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type E (Fusion)
Model Number: FS25MQMJ ***Serial Number:*** N/A

Product Construction Summary:
NEMA 1 Ventilated Carbon Steel Enclosure.

Options/Subcomponent Summary:
0.025kVA. 1 Phase. General purpose enclosed transformer. OWC Copper windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3	5.9	2.7	3.3	21.70	28.00	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT1 was base mounted - rigid to the seismic table using four (4) #10-32 screws, washers and lock washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9410 (UUT1)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 2

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type E (Fusion)
Model Number: FS7500MQMJ ***Serial Number:*** N/A

Product Construction Summary:
NEMA 1 Ventilated Carbon Steel Enclosure.

Options/Subcomponent Summary:
7.5 kVA. 1 Phase. General purpose enclosed transformer. OWC Copper windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
104	15.1	9.3	8.0	18.70	28.00	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT2 was base mounted - rigid to the seismic table using four (4) 3/8" Grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9410 (UUT2)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 3

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type PH & 3AH (Spartan)
Model Number: PH25MQMJ ***Serial Number:*** N/A

Product Construction Summary:
Non-enclosed.

Options/Subcomponent Summary:
0.025 kVA. 1 Phase. Open core & coil style. OWC Copper windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3.5	3.0	4.4	3.2	21.40	21.60	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT3 was base mounted - rigid to the seismic table using four (4) #10-32 screws, washers and lock washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9405 (UUT3)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 4

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type PH & 3AH (Imperator)
Model Number: SP7500MQMJ ***Serial Number:*** N/A

Product Construction Summary:
Non-enclosed.

Options/Subcomponent Summary:
1 Phase. Open core & coil style with molded covers. Enclosed OWC Copper windings.

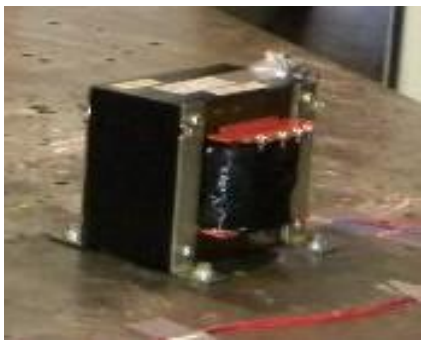
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
97	9.0	9.9	7.8	>33.33	22.20	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:



UUT4 was base mounted - rigid to the seismic table using four (4) 3/8" 16 hex head bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9405 (UUT4)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 5

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F & K (Sentinel)
Model Number: NFP015LEAH3 ***Serial Number:*** N/A

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:
15 kVA. 1 phase. Energy Efficient General Purpose. Vacuum pressure impregnated (VPI) Aluminum windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
185	20.2	19.4	21.5	23.40	11.50	23.80

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT5 was base mounted - rigid to the seismic table using four (4) 1/2" Grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9504 (UUT5)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 6

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F & K (Millenium)
Model Number: MV3S1500SKC ***Serial Number:*** N/A

Product Construction Summary:
NEMA 3R Ventilated Carbon Steel Enclosure. Modified I-beam base frame.

Options/Subcomponent Summary:
1,500 kVA. 3 phase. General purpose medium voltage distribution. Vacuum pressure impregnated (VPI) Copper and Aluminum windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
6,600	51.4	64.0	75.0	13.80	15.40	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT6 was base mounted - rigid using ten (10) 5/8" Grade 5 bolts, washers, and lock washers torqued to 150 ft.-lbs.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9504 (UUT6)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 7

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type Q & QT (Titan)
Model Number: QC05YECB ***Serial Number:*** N/A

Product Construction Summary:
NEMA 3R Non-ventilated Carbon Steel Enclosure.

Options/Subcomponent Summary:
0.05 kVA. 1 phase. Industrial Encapsulated. Copper Windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
6	5.3	3.8	7.3	18.60	22.20	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT 7

UUT7 was base mounted - rigid to the seismic table using three (3) #10-32 screws.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9411 (UUT7)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 8

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type Q & QT (Titan)
Model Number: P150KBKF ***Serial Number:*** N/A

Product Construction Summary:
NEMA 3R Non-ventilated Carbon Steel Enclosure.

Options/Subcomponent Summary:
150 kVA. 3 phase. Industrial Encapsulated. Copper windings.

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,450	26.0	38.5	39.1	19.80	21.60	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT8 was base mounted - rigid to the seismic table using four (4) 5/8" Grade 5 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = EL:9411 (UUT8)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 9

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F and K (Cast Resin Construction)
Model Number: 300 kVA ***Serial Number:*** N/A

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. Coordinated bus enclosure. (2) Cast resin construction coils with copper and aluminum windings;
(1) Vacuum pressure impregnated (VPI) coil with copper and aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3,870	50.0	76.0	74.1	8.30	11.50	30.70

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT9 was base mounted - rigid to the seismic table using (8) 5/8" Grade 8 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = ETL: 13534, Rev.2 (UUT9)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 10

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F and K (Cast Resin Construction)
Model Number: 3750 kVA ***Serial Number:*** N/A

Product Construction Summary:
NEMA 1 Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. Coordinated bus enclosure. (2) Cast resin construction coils with Copper and Aluminum windings;
(1) Vacuum pressure impregnated (VPI) coil with Copper and Aluminum Windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
16,595	72.0	125.0	111.0	4.00	4.30	20.70

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT10 was base mounted - rigid to the seismic table using eighteen (18) 3/4" Grade 8 bolts.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = ETL: 13534, Rev.2 (UUT10)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 11

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	HZ3A0003KBKB-WW1	***Serial Number:***	AB00705130

Product Construction Summary:

NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Titan 2 kVA, Copper windings

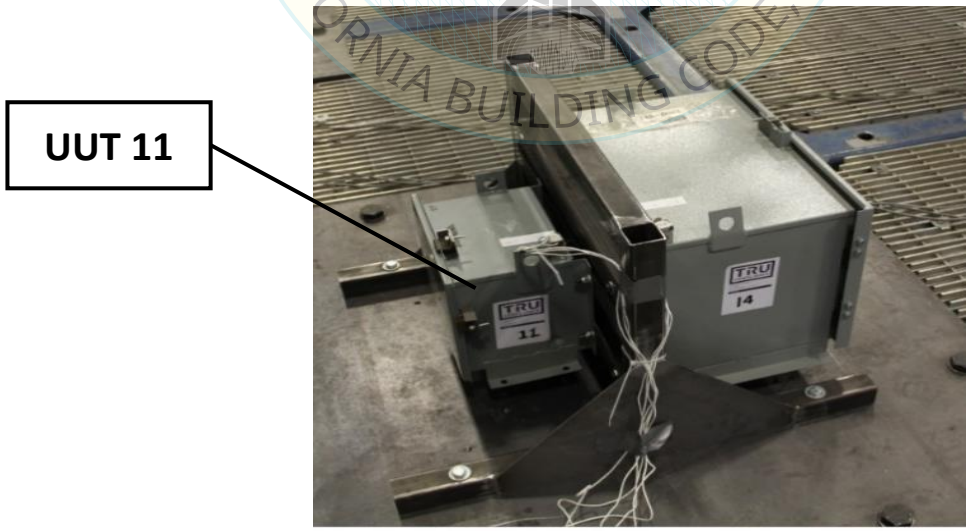
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
75	8.8	12.3	13.2	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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:



UUT11 was wall mounted-rigid using four (4) 1/2" Grade 5 bolts with four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT11)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 12

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Transformer Product Families
Model Number: 226942-OSHPD ***Serial Number:*** AB00708494

Product Construction Summary:
NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. Titan 15kVA, Copper and Aluminum windings

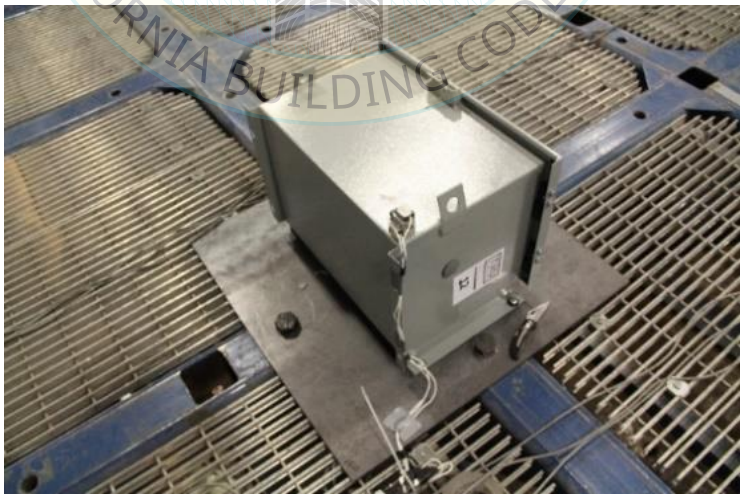
UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
295	14.0	21.3	17.0	22.09	22.25	>33.33

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:



UUT12 was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT12)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 13

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Transformer Product Families
Model Number: HZ3A0003KBKB-WW1 ***Serial Number:*** AB00705130

Product Construction Summary:
NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. Titan 2 kVA, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
75	8.8	12.3	13.2	>33.33	>33.33	23.38

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT13 was base mounted-rigid with (3) 3/8" Grade 5 bolts and (3) 3/8" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT13)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 14

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	226942-OSHPD	***Serial Number:***	AB00708493

Product Construction Summary:

NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Titan 15kVA, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
295	14.1	21.3	17.0	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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT14 was wall mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT14)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 15

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	225745-WW8	***Serial Number:***	CB0906533

Product Construction Summary:

NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Titan 30kVA, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
470	17.0	23.8	21.8	10.04	12.45	13.11

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT15 was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT15)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 16

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Transformer Product Families
Model Number: 226943-WW2 ***Serial Number:*** AA00710195

Product Construction Summary:
NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. Titan 150kVA, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
3,520	27.0	43.0	36.0	11.37	9.93	9.79

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT16 was base mounted-rigid with (7) 1/2" Grade 5 bolts with flat washers and (1) 3/8" Grade 5 bolt with flat washer.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT16)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 17

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	XG3N0015LE	***Serial Number:***	CB000916487

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Sentinel 15kVA, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
160	20.1	21.5	22.0	14.00	14.34	26.91

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT17 was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT17)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 18

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	45-OSHPD-CUAL	***Serial Number:***	CB00924392

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Sentinel 45kVA, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
430	25.8	23.8	28.8	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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT18 was wall mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT18)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 19

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	XG3N0015LE	***Serial Number:***	CB00916491

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Sentinel 15kVA, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
160	21.5	20.1	22.0	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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT19 was wall mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT19)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 20

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Transformer Product Families
Model Number: 45-OSHPD-CUAL ***Serial Number:*** CB00924391

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. 45kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
430	25.8	23.8	28.8	10.29	9.16	13.80

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT20 was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT20)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 21

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	225712-WW4	***Serial Number:***	C000906540

Product Construction Summary:

NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. 90kVA Titan, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,600	26.0	35.1	26.8	11.35	11.43	11.51

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT21 was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT21)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 22A

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	225745-WW8	***Serial Number:***	CB0906533

Product Construction Summary:

NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Titan 30kVA, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
470	17.0	23.8	21.8	23.88	17.69	18.16

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT22A was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers. Units factory base assembly was removed and a 16ga base assembly was welded to the base.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT22A) [UUT15 modified]

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 22B

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Transformer Product Families		
Model Number:	225745-WW8	***Serial Number:***	CB0906533

Product Construction Summary:

NEMA 4 Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. Titan 30kVA, Copper windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
470	17.0	23.8	21.8	23.88	17.69	18.16

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT22B was wall mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers. Standard 16ga. wall mount flanges were welded to the unit. Flanges on production models will be continuous and integral rather than welded.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT22B) [UUT15 modified]

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 23

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Transformer Product Families
Model Number: 45-OSHPD-CUAL ***Serial Number:*** CB00924391

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure. Fasteners from all PEM nuts removed prior to test.

Options/Subcomponent Summary:
3 Phase. 45kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
430	25.8	23.8	28.8	9.43	8.63	13.64

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

Note that UUT23 was previously tested as UUT 20. All pem nuts were removed from UUT 20 to create the new test unit. UUT23 was base mounted-rigid with four (4) 1/2" Grade 5 bolts and four (4) 1/2" washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 1800840-TR-001-R0 (UUT23) [UUT20 modified]

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 24

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Sentinel/Millenium/Tribune		
Model Number:	DH10-OSHPD21-N2	***Serial Number:***	CC01171632

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. 1,500 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
9,800	54.0	78.0	87.0	6.91	7.70	29.41

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT24 was base mounted - rigid with eight (8) 5/8" Grade 5 bolts with washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = Clark: JID 21-01539 Rev.1 (UUT1)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 25

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Sentinel/Millenium/Tribune		
Model Number:	DH4-OSHPD21-TB	***Serial Number:***	CC01154640

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. 225 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1,656	31.5	29.0	44.5	9.75	5.02	18.06

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT25 was base mounted - rigid with four (4) 1/2" Grade 5 bolts with washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-001-R0 (UUT2)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 26

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Sentinel/Millenium/Tribune		
Model Number:	DH3-OSHPD21-WM	***Serial Number:***	CB01154359

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. 112 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
451	26.0	28.3	36.0	7.68	8.05	8.16

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT26 was base mounted - rigid with four (4) 1/2" Grade 5 bolts with washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-001-R0 (UUT3)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 27

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F and K (Custom Voltage)
Model Number: DH4-OSHPD21-TP1INT ***Serial Number:*** CC01154638

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. 163 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
996	29.0	31.5	44.5	9.75	6.94	17.68

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT27 was base mounted - rigid with four (4) 1/2" Grade 5 bolts with washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-001-R0 (UUT15) [UUT11 modifed]

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 28

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F and K (Custom Voltage)
Model Number: DH4-OSHPD21-TP1BW ***Serial Number:*** CC01154639

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. 200 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
984	29.0	31.5	44.5	9.76	6.25	6.56

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT28 was base mounted - rigid with four (4) 1/2" Grade 5 bolts with washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-001-R0 (UUT16) [UUT12 modified]

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 29

Manufacturer: Hammond Power Solutions, Inc.
Model Line: Type F and K (Custom Voltage)
Model Number: DH2-OSHPD21-TP1BW ***Serial Number:*** CB01154360

Product Construction Summary:
NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:
3 Phase. 60 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
469	22.5	23.3	28.8	7.57	8.15	7.39

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT29 was base mounted - rigid with four (4) 1/2" Grade 5 bolts with washers.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-001-R0 (UUT17) [UUT13 modified]

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 30

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Sentinel/Millenium/Tribune		
Model Number:	DH3-OSHPD21-WM	***Serial Number:***	CB01154359

Product Construction Summary:

NEMA 3R Carbon Steel Enclosure.

Options/Subcomponent Summary:

3 Phase. 112 kVA Sentinel, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
451	26.0	28.3	56.0	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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT30 was wall mounted - rigid to the wall fixture with eight (8) 1/2" 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.
UUT Test Report = 2100426-TR-001-R0 (UUT18)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 31

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Type F and K (Custom Voltage)		
Model Number:	237485	***Serial Number:***	AA00788540

Product Construction Summary:

NEMA 1 Carbon Steel Enclosure (12Ga, welded construction).

Options/Subcomponent Summary:

3 Phase. 300 kVA, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
5,413	62.0	90.0	92.5	15.39	11.07	11.58

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT31 was base mounted - rigid using six (6) 1/2" Grade 5 bolts and washers used for the enclosure tabs and twelve (12) 3/4" Grade 5 bolts and washers to secure the transfromer.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-002-R0 (UUT31)

UNIT UNDER TEST (UUT) SUMMARY SHEET

2100426-CR-001-R3

UUT 32

Manufacturer:	Hammond Power Solutions, Inc.		
Model Line:	Type F and K (Custom Voltage)		
Model Number:	238043	***Serial Number:***	AA00784505

Product Construction Summary:

NEMA 1 Carbon Steel Enclosure (12 GA, Integrated Door Retention Tab). P/N: 238043, ENC 10407

Options/Subcomponent Summary:

3 Phase. 3750 kVA, Copper and Aluminum windings

UUT Properties

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
23,325	74.0	126.0	111.5	5.36	8.56	9.05

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	2.0	1.0	1.5	3.20	2.40	1.33	0.53
		2.0	0.0					

Test Mounting Details:

UUT32 was base mounted - rigid using six (6) 1/2" Grade 5 bolts and washers used for the enclosure tabs and twelve (12) 3/4" Grade 5 bolts and washers to secure the transfromer.
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.
Contents were included in testing per operating conditions.
UUT Test Report = 2100426-TR-002-R0 (UUT32A)