



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

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

OFFICE USE ONLY

**APPLICATION #: OSP-0623**

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

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: Cummins Power Generation

Manufacturer's Technical Representative: B.S. Raghukumar

Mailing Address: 1400 73rd Ave N.E, Fridley, MN 55432

Telephone: (763) 574-3302

Email: b.s.raghukumar@cummins.com

**Product Information**

Product Name: Emergency and Standby Power Systems

Product Type: Automatic Transfer Switches

Product Model Number: See Attachment

General Description: Automatic Transfer Switches for transferring power between utility and generator. NEMA 1/3R/4/12/4X rating, 400A-3000A.

Mounting Description: See Certified Product Tables

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: Structural Integrity Associates, Inc. dba TRU Compliance

Contact Person: Stephen Reimus

Mailing Address: 5215 Hellyer Ave Suite 210, San Jose, CA 94608

Telephone: (541) 292-5820

Email: sreimus@structint.com

Title: Senior Engineer





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

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

**Certification Method**

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

**Testing Laboratory**

Company Name: 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: TWIN CITY FAN COMPANIES LABORATORY (Formerly Seismic Test Co)  
Contact Person: Matt Settergren  
Mailing Address: 5959 Trenton Lane North, Plymouth MN 55442  
Telephone: (763) 551-7535 Email: msettergren@tcf.com





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**Seismic Parameters**

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.39 (SDS = 1.85g); 1.33 (SDS = 2.96g)

SDS (Design spectral response acceleration at short period, g) = 1.85g (z/h = 1.0); 2.96g (z/h = 0.0)

$a_p$  (Amplification factor) = 2.5

$R_p$  (Response modification factor) = 6.0

$\Omega_0$  (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

**OSHPD Approval (For Office Use Only) - Approval Expires on 09/28/2027**

Date: 9/24/2021

Name: Mohammad Aliaari Title: Senior Structural Engineer

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

Condition of Approval (if applicable): DATE: 09/24/2021



# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>TABLE 1</b>
<b>Model Line:</b> CXS, CXT, CXR Automatic Transfer Switches	

**Certified Product Construction Summary:**  
Enclosure Material: Carbon and Stainless Steels (12 gage)

**Certified Options Summary:**  
Amperage: 400 - 3000  
Voltage: 120, 208, 240, 480, 600  
NEMA Rating: 1, 3R, 4, 12, 4X

**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 2019**      **Seismic Certification Limits:**       $S_{DS} = 1.85g \quad z/h=1.0$        $I_p = 1.5$   
 $S_{DS} = 2.96g \quad z/h=0.0$

Model Line	Model	Dimensions (in)				Weight (lb)	Ten <sup>1</sup> (lb)	Notes	UUT
		Depth	Width	Height	CG Height				
CXS	CXSB8, 3 Pole	21.3	33.1	58.9	23.4	395	434	Carbon Steel, NEMA 1	Extrap.
		24.4	33.1	58.9	23.4	498	478	Carbon Steel, NEMA 3R	Extrap.
		24.4	33.1	58.9	23.4	498	478	Carbon Steel, NEMA 4 & 12	Extrap.
		24.4	33.1	58.9	23.9	502	492	Stainless Steel, NEMA 4X	Extrap.
	CXSB8, 4 Pole	21.3	33.1	58.9	23.4	402	442	Carbon Steel, NEMA 1	Extrap.
		24.4	33.1	58.9	23.4	505	484	Carbon Steel, NEMA 3R	Extrap.
		24.4	33.1	58.9	23.4	505	484	Carbon Steel, NEMA 4 & 12	Extrap.
		24.4	33.1	58.9	23.9	509	499	Stainless Steel, NEMA 4X	Extrap.
CXT	CXTC8, 3 Poles	25	33.1	62.8	27.0	582	629	Carbon Steel, NEMA 1	Extrap.
		28.3	33.1	62.8	27.0	690	658	Carbon Steel, NEMA 3R	Extrap.
		28.3	33.1	62.8	27.0	690	658	Carbon Steel, NEMA 4 & 12	Extrap.
		28.3	38.1	62.8	28.6	741	749	Stainless Steel, NEMA 4X	Extrap.
	CXTC8, 4 Poles	25	33.1	62.8	27.0	614	663	Carbon Steel, NEMA 1	Extrap.
		28.3	33.1	62.8	27.0	721	688	Carbon Steel, NEMA 3R	Extrap.
		28.3	33.1	62.8	27.0	721	688	Carbon Steel, NEMA 4 & 12	Extrap.
		28.3	38.1	62.8	28.6	772	780	Stainless Steel, NEMA 4X	Extrap.
	CXTD8, 3 Poles	25	38.1	62.8	28.6	657	752	Carbon Steel, NEMA 1	Extrap.
		28.3	38.1	62.8	28.6	759	767	Carbon Steel, NEMA 3R	Extrap.
		28.3	38.1	62.8	28.6	759	767	Carbon Steel, NEMA 4 & 12	Extrap.
		28.3	38.1	62.8	27.4	772	747	Stainless Steel, NEMA 4X	Extrap.
	CXTD8, 4 Poles	25	38.1	62.8	28.6	700	801	Carbon Steel, NEMA 1	Extrap.
		28.3	38.1	62.8	28.6	851	860	Carbon Steel, NEMA 3R	5

Additional Notes:  
<sup>1</sup>Ten = Weight\*CG Height/Smaller of Depth and Width

# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>TABLE 1</b>
<b>Model Line:</b> CXS, CXT, CXR Automatic Transfer Switches	

**Certified Product Construction Summary:**  
Enclosure Material: Carbon and Stainless Steels (12 gage)

**Certified Options Summary:**  
Amperage: 400 - 3000  
Voltage: 120, 208, 240, 480, 600  
NEMA Rating: 1, 3R, 4, 12, 4X

**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 2019**      **Seismic Certification Limits:**       $S_{DS} = 1.85 g \quad z/h = 1.0$        $I_p = 1.5$   
 $S_{DS} = 2.96 g \quad z/h = 0.0$

Model Line	Model	Dimensions (in)				Weight (lb)	Ten <sup>1</sup> (lb)	Notes	UUT
		Depth	Width	Height	CG Height				
CXT	CXTD8, 4 Poles	28.3	38.1	62.8	28.6	821	830	Carbon Steel, NEMA 4 & 12	Interp.
		28.3	38.1	62.8	27.4	801.5	776	Stainless Steel, NEMA 4X	6
CXR	CXRE8, 3 poles	48.9	39.6	89.6	47	1432	1700	Carbon Steel, NEMA 1	2
		48.9	39.6	89.6	47	1600	1899	Carbon Steel, NEMA 3R	Interp.
		46.6	39.1	90.1	47	1400	1683	Carbon Steel, NEMA 4, & 12	Interp.
		46.6	39.1	90.1	47	1300	1563	Stainless Steel, NEMA 4X	Interp.
	CXRE8, 4 poles	48.9	39.6	89.6	47	1700	2018	Carbon Steel, NEMA 1	Interp.
		48.9	39.6	89.6	47	1800	2136	Carbon Steel, NEMA 3R	Interp.
		46.6	39.1	90.1	47	1000	1202	Carbon Steel, NEMA 4, & 12	Interp.
		46.6	39.1	90.1	47	1500	1803	Stainless Steel, NEMA 4X	Interp.
	CXRF8, 3 poles	57.6	47	89.6	47	2100	2100	Carbon Steel, NEMA 1	Interp.
		57.6	47	89.6	47	2200	2200	Carbon Steel, NEMA 3R	Interp.
		55.1	46.4	90.1	47	2000	2026	Carbon Steel, NEMA 4, & 12	Interp.
		55.1	46.4	90.1	47	1850	1874	Stainless Steel, NEMA 4X	Interp.
	CXRF8, 4 poles	57.6	47	89.6	47	2300	2300	Carbon Steel, NEMA 1	Interp.
		57.6	47	89.6	47	2400	2400	Carbon Steel, NEMA 3R	Interp.
		55.1	46.4	90.1	47	2200	2228	Carbon Steel, NEMA 4, & 12	Interp.
		55.1	46.4	90.1	47	1854	1878	Stainless Steel, NEMA 4X	Interp.
	CXRG8, 3 poles	57.6	47	89.6	47	2200	2200	Carbon Steel, NEMA 1	Interp.
		57.6	47	89.6	47	2300	2300	Carbon Steel, NEMA 3R	Interp.
		55.1	46.4	90.1	47	2000	2026	Carbon Steel, NEMA 4, & 12	Interp.
		55.1	46.4	90.1	47	1854	1878	Stainless Steel, NEMA 4X	3

Additional Notes:  
<sup>1</sup>Ten = Weight\*CG Height/Smaller of Depth and Width



# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>TABLE 2</b>
<b>Model Line:</b> CXS, CXT Automatic Transfer Switches	

**Certified Product Construction Summary:**  
 Enclosure Material: Carbon Steel (12 gage)  
 Units sit on and attach to 23.5" base stand as well as attach to wall

**Certified Options Summary:**  
 Amperage: 400 - 800  
 Voltage: 120, 208, 240, 480, 600  
 NEMA Rating: 1, 4, 12

**Mounting Configuration:**  
 Concurrently Wall & Base Mounted Rigidly with Base Mounted Floorstand  
 Note: Installed mounting configuration must be of similar configuration and equivalent strength and stiffness to those tested.

**Building Code: CBC 2019**      **Seismic Certification Limits:**       $S_{DS} = 1.85 g$      $z/h = 1.0$        $I_P = 1.5$   
 $S_{DS} = 2.96 g$      $z/h = 0.0$

Model Line	Model	Dimensions (in) <sup>1</sup>				Weight <sup>2</sup> (lb)	Ten <sup>3</sup> (lb)	Notes	UUT
		Depth	Width	Height	CG Height				
CXS	CXS8, 3 Poles	21.3	33.1	58.9	23.4	395	434	Carbon Steel, NEMA 1	Extrap.
		24.4	33.1	58.9	23.4	498	478	Carbon Steel, NEMA 4 & 12	Extrap.
	CXS8, 4 Poles	21.3	33.1	58.9	23.4	402	442	Carbon Steel, NEMA 1	Extrap.
		24.4	33.1	58.9	23.4	505	484	Carbon Steel, NEMA 4 & 12	Extrap.
CXT	CXTC8, 3 Poles	25	33.1	62.8	27.0	554.5	599	Carbon Steel, NEMA 1	7
		28.3	33.1	62.8	27.0	690	658	Carbon Steel, NEMA 4 & 12	Interp.
	CXTC8, 4 Poles	25	33.1	62.8	27.0	614	663	Carbon Steel, NEMA 1	Interp.
		28.3	33.1	62.8	27.0	721	688	Carbon Steel, NEMA 4 & 12	Interp.
	CXTD8, 3 Poles	25	38.1	62.8	28.6	657	752	Carbon Steel, NEMA 1	Interp.
		28.3	38.1	62.8	28.6	759	767	Carbon Steel, NEMA 4 & 12	Interp.
	CXTD8, 4 Poles	25	38.1	62.8	28.6	700	801	Carbon Steel, NEMA 1	Interp.
		28.3	38.1	62.8	28.6	856	865	Carbon Steel, NEMA 4 & 12	8

**Additional Notes:**  
<sup>1</sup>Height and CG Height listed do not include height of floor stand (23.5 in). Refer to Table 5 for heights of floor stands  
<sup>2</sup>Weight listed does not include weight of floor stand. Refer to Table 5 for weights of floor stands  
<sup>3</sup>Ten = Weight\*CG Height/Smaller of Depth and Width



# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>Table Description:</b> Various Subcomponents	<b>TABLE 4</b>
<b>Model Line:</b> CXS, CXT, CXR Automatic Transfer Switches (Non-Service Entrance Models)		

<b>Building Code:</b> CBC 2019	<b>Seismic Certification Limits:</b>	$S_{DS} = 1.85 g$ $z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 2.96 g$ $z/h = 0.0$	

Component Type	Manufacturer	Model	Description	Notes	UUT
Controller	Cummins	PC80	Level 2 Controller, Electronics & Plastic	under 10 lbs., 10 amps	1-3
Heater	Stego	02810.9-00	Heater	under 10 amps and lbs	1, 2
Manual Switch	Cummins	A059A165	Manual Lock Switch/Actuator		1, 3, 4
Protective Relays	Electroswitch Co.	78PJ03A-011	Lockout Relay		1, 2
	Basler Electric	BE1-32R-E2E-E1R-A0N1F	Power Relay		1, 2
	Time Mark Co.	360-24V-.1SEC	Timing Relay		1, 2
Solenoid	Cummins	A058D675	B-Frame, 3-P & 4-P, 208V	Under 10 lbs and 10 amps	Extrap.
		A058D854	B-Frame, 3-P & 4-P, 208V-Release	Under 10 lbs and 10 amps	Extrap.
		A058D848	B-Frame, 3-P & 4-P, 208V-Changeover	Under 10 lbs and 10 amps	Extrap.
		A061T102	B-Frame, 3-P & 4-P, 240V	Under 10 lbs and 10 amps	9, 10
		A053M566	B-Frame, 3-P & 4-P, 240V-Release	Under 10 lbs and 10 amps	9, 10
		A053J886	B-Frame, 3-P & 4-P, 240V-Changeover	Under 10 lbs and 10 amps	9, 10
		A062L967	C & D-Frame Release Solenoid, 208V	Under 10 lbs and 10 amps	Interp.
		A064D147	C & D-Frame Release Solenoid, 480V	Under 10 lbs and 10 amps	Interp.
		A064D145	C & D-Frame Release Solenoid, 600V	Under 10 lbs and 10 amps	5, 6, 7, 8
		A063H530	C-Frame, 3-P, 208V	Weight: 12 lbs	7
		A064D040	C-Frame, 3-P, 480V	Weight: 12.8 lbs	Interp.
		A064D041	C-Frame, 3-P, 600V	Weight: 13.5 lbs	Interp.
		A063G320	C-Frame, 4-P, D-Frame, 3-P & 4-P, 208V	Weight: 16 lbs	5, 6
		A064D141	C-Frame, 4-P, D-Frame, 3-P & 4-P, 480V	Weight: 17 lbs	8
		A064D144	C-Frame, 4-P, D-Frame, 3-P & 4-P, 600V	Weight: 17.8 lbs	Interp.
A061V062	E-Frame, 3-P & 4-P, 480V	Weight: 33 lbs	Interp.		
A059B794	H&F-Frame 3-P, G-Frame 4-P, 480V	Weight: 33 lbs	Interp.		

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation <b>Model Line:</b> CXS, CXT, CXR Automatic Transfer Switches (Non-Service Entrance Models)		<b>Table Description:</b> Various Subcomponents			<b>TABLE 4</b>	
<b>Building Code:</b> CBC 2019		<b>Seismic Certification Limits:</b>			$S_{DS} = 1.85 g \quad z/h = 1.0$ $S_{DS} = 2.96 g \quad z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT	
Solenoid	Cummins	A063H825	F-Frame 4-P, G-Frame 3-P, 480V	Weight: 33 lbs	3	
		A061V064	E-Frame, 3-P & 4-P, 600V	Weight: 34.5 lbs	Interp.	
		A059B822	H&F-Frame 3-P, G-Frame 3-P & 4-P, 600V	Weight: 34.5 lbs	Interp.	
		A063H827	F-Frame 4-P, G-Frame 3-P, 600V	Weight: 34.5 lbs	Interp.	
		A059B832	H-Frame 4-P, 600V	Weight: 43.5 lbs	Interp.	
		A056H913	E-Frame, 3-P & 4-P, 208V	Weight: 36 lbs	2	
		A054M111	H&F-Frame 3-P, G-Frame 4-P, 208V	Weight: 36 lbs	4	
		A063H826	F-Frame 4-P, G-Frame 3-P, 208V	Weight: 36 lbs	Interp.	
		A055L403	H-Frame 4-P, 208V	Weight: 48 lbs	Interp.	
		A059B800	H-Frame 4-P, 480V	Weight: 45.5 lbs	1	
Solid Neutral	Cummins	A063A376	Accessory for 3 pole B -Frame TS		Extrap.	
		A064Z459	Accessory for 3 pole C -Frame TS		7	
		A064Z455	Accessory for 3 pole C -Frame TS		7	
		A060P743	Accessory for 3 pole E -Frame TS		2	
		A060U561	Accessory for 3 pole F/G -Frame TS		3	
		A058X344	Accessory for 3 pole H -Frame TS		1	
Solid State Relays	Allen Bradley	700-SH25VZ25	Solid State Relay		1	
	Crydom	H16WD6050G	Solid State Relay		1	
	TE	SSR-480D50R	Solid State Relay		1	
Surge Suppressor	Square D	N/A		Weight: 0.5 lbs	5, 6, 8	
		TVS1IMA1201		Weight: 8.4 lbs	Interp.	
		TVS2IMA1201		Weight: 8.4 lbs	Interp.	
		TVS2IMA2401		Weight: 8.4 lbs	Interp.	

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<b>Building Code:</b> CBC 2019		<b>Seismic Certification Limits:</b>			$S_{DS} = 1.85 g \quad z/h = 1.0$ $S_{DS} = 2.96 g \quad z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT	
Surge Suppressor	Square D	TVS3IMA1201		Weight: 8.4 lbs	Interp.	
		TVS1IMA2401		Weight: 8.4 lbs	Interp.	
		TVS6IMA1201		Weight: 8.4 lbs	Interp.	
		TVS3IMA2401		Weight: 8.4 lbs	Interp.	
		TVS6IMA2401		Weight: 8.4 lbs	Interp.	
		TVS4IMA1201		Weight: 8.4 lbs	5, 6, 8	
		TVS4HIMA1201		Weight: 8.4 lbs	Interp.	
		TVS4HIMA2401		Weight: 8.4 lbs	Interp.	
		TVS5IMA1201		Weight: 8.4 lbs	Interp.	
		TVS5IMA2401		Weight: 8.4 lbs	Interp.	
		TVS8IMA1201		Weight: 8.4 lbs	4	
		TVS4IMA2401		Weight: 8.4 lbs	Interp.	
		TVS8HIMA1201		Weight: 8.4 lbs	Interp.	
		TVS9IMA1201		Weight: 8.4 lbs	Interp.	
		TVS8IMA2401		Weight: 8.4 lbs	Interp.	
		N/A	Display for Surge Device	Weight: 0.5 lbs	1, 3	
		TVS8HIMA1801	Surge Suppressor	Weight: 8.4 lbs	3	
TVS9IMA1801	Surge Suppressor	Weight: 8.4 lbs	1			
Thermostat	Stego	01160.0-00	Thermostat for heater	under 10 amps and lbs	1, 2	
Transfer Switch	Cummins	CXSB8	3 pole	Weight: 44 lbs	Extrap.	
		CXSB8	4 pole	Weight: 51 lbs	9, 10	
		CXTC8	3 pole	Weight: 150 lbs	Interp.	
		CXTD8	3 pole	Weight: 180 lbs	7	

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation <b>Model Line:</b> CXS, CXT, CXR Automatic Transfer Switches (Non-Service Entrance Models)		<b>Table Description:</b> Various Subcomponents			<b>TABLE 4</b>	
<b>Building Code:</b> CBC 2019		<b>Seismic Certification Limits:</b>			$S_{DS} = 1.85 g \quad z/h = 1.0$ $S_{DS} = 2.96 g \quad z/h = 0.0$	
Component Type	Manufacturer	Model	Description	Notes	UUT	
Transfer Switch	Cummins	CXTC8	4 pole	Weight: 180 lbs	Interp.	
		CXTD8	4 pole	Weight: 220 lbs	5, 6, 8	
		CXRE8	3 pole	Weight: 400 lbs.	2	
		CXRF8	3 pole	Weight: 600 lbs.	Interp.	
		CXRG8	3 pole	Weight: 800 lbs.	3	
		CXRH8	3 pole	Weight: 1000 lbs.	Interp.	
		CXRE8	4 pole	Weight: 600 lbs.	Interp.	
		CXRF8	4 pole	Weight: 800 lbs.	Interp.	
		CXRG8	4 pole	Weight: 1000 lbs.	4	
		CXRH8	4 pole	Weight: 1200 lbs.	1	
Transformer	Hammond HPS	PH500SP	Transformer for heat accessory	Weight: 14 lbs	2	
		PF500MBMH	Transformer for heat accessory	Weight: 16 lbs	1	
		A065S757	PM8000 and DC Power Supply transformer 600V option	Under 10 lbs and 10 amps	8	
		A065S758	B Frame Mechanism Power, C-D Frame Transformer for heater power supply	Weight: 11 lbs	9, 10	

# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENT MATRIX

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>Table Description:</b> Enclosures	<b>TABLE 5</b>
<b>Model Line:</b> CXS, CXT, CXR Automatic Transfer Switches (Non-Service Entrance Models)		

<b>Building Code:</b> CBC 2019	<b>Seismic Certification Limits:</b>	$S_{DS} = 1.85 g \quad z/h = 1.0$	$I_p = 1.5$
		$S_{DS} = 2.96 g \quad z/h = 0.0$	

Model Line (Manufacturer)	Model	Dimension (in)			Weight (lb)	Material	Notes	UUT	
		Depth	Width	Height					
Enclosure (Hoffman)	Transfer Switch Enclosure <sup>1</sup>	12.5	28	45.5	310	Carbon Steel	NEMA 1 & 3R	9	
		16.9	28	45.5	390		NEMA 3R	10	
		21.3	33.1	58.9	515		NEMA 3R, 4, 12	Interp.	
		24.4	33.1	58.9	620		NEMA 1 & 3R	Interp.	
		25	33.1	62.8	745		NEMA 1	7	
		28.3	38.1	62.8	880		NEMA 3R, 4, 12	6, 8	
		24.4	33.1	58.9	635		Stainless Steel	NEMA 4X	Interp.
		46.6	39.1	90.1	733				Interp.
		55.1	46.4	90.1	895				3, 4
		28.3	33.1	62.8	990				6
Enclosure (Cummins)	Transfer Switch Enclosure	48.9	39.6	89.6	600	Carbon Steel	NEMA 1 & 3R	2	
		57.6	47	89.6	840			Interp.	
		65	55.2	89.6	1110			1	
Floor Stands (Cummins)	A066B226-B Frame	34.2	25.6	23.5	243	Carbon Steel (ASTM A500 Gr. B)		Extrap.	
	A066A284-C Frame	34.2	27.8	23.5	260			7	
	A066A688-D Frame	39.2	27.8	23.5	279			8	

Additional Notes:  
<sup>1</sup>No differences between construction of the stainless and carbon steel enclosures other than material used to construct the enclosure.



# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801393-CR-001-R4

<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 1</b>
<b>Model Line:</b> CXR Automatic Transfer Switches	
<b>Model Number:</b> CXRH8, 4 Pole	
<b>Serial Number:</b> N/A	

**Product Construction Summary:**  
H-Frame, Carbon Steel, NEMA 3R

**Options/Subcomponent Summary:**  
**Controller:** Cummins PC80; **Transfer Switch:** Cummins 4 Poles A/B/C/N; **Solid Neutral:** Cummins; **Transformer:** Hammond HPS; **Heater:** Stego; **Thermostat:** Stego; **Surge Suppressor:** Square D Display, Square D Suppressor; **Protective Relays:** Electrosswitch Co. Lockout Relay, Basler Electric Power Relay, Time Mark Co. Timing Relay; **Solenoid:** Cummins; **Manual Switch:** Cummins; **Solid State Relays:** Crydom, TE, Allen Bradley; **NEMA Rating:** 3R; **Amperage:** 2600-3000; **Voltage:** 480V

**UUT Properties**

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2980	65	55.2	89.6	6.56	6.96	6.83

**UUT Highest Passed Seismic Run Information**

Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79
		2.96	0.0					

**Test Mounting Details:**



Unit was rigid mounted to test fixture using twelve (12) 3/8" Grade 8 bolts with 1/2" plate washers and 3/8" flat washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4

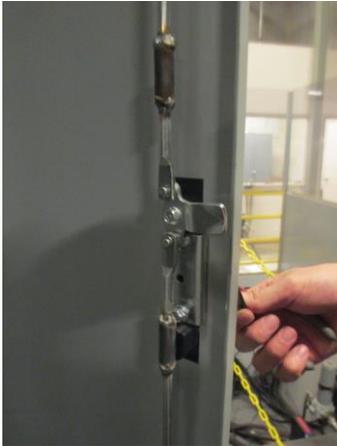


**Manufacturer:** Cummins Power Generation  
**Model Line:** CXR Automatic Transfer Switches  
**Model Number:** CXRH8, 4 Pole **Serial Number:** N/A

**UUT 1**

**Seismic Upgrades Implemented:**

Top and bottom vertical rods attached to the cabinet latch were lengthened by 1/2".



# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 2</b>
<b>Model Line:</b> CXR Automatic Transfer Switches	
<b>Model Number:</b> CXRE8, 3 Pole	
<b>Serial Number:</b> N/A	

**Product Construction Summary:**  
E-Frame, Carbon Steel, NEMA 1

**Options/Subcomponent Summary:**  
**Controller:** Cummins PC80; **Transfer Switch:** Cummins 3 Poles A/B/C; **Solid Neutral:** Cummins; **Transformer:** Hammond HPS; **Thermostat:** Stego; **Heater:** Stego; **Protective Relays:** Electrosswitch Co. Lockout Relay, Basler Electric Power Relay, Time Mark Co. Timing Relay; **Solenoid:** Cummins; **NEMA Rating:** 1; **Amperage:** 1200; **Voltage:** 208V

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1432	48.9	39.6	89.6	8.49	5.28	6.06

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)	
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	2.13	0.85	
		3.20	0.0						

**Test Mounting Details:**



Unit was rigid mounted to test fixture using twelve (12) 3/8" Grade 8 bolts with 1/2" plate washers and 3/8" flat washers. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 3</b>
<b>Model Line:</b> CXR Automatic Transfer Switches	
<b>Model Number:</b> CXRG8, 3 Pole	
<b>Serial Number:</b> N/A	

**Product Construction Summary:**  
G-Frame, Stainless Steel, NEMA 4X

**Options/Subcomponent Summary:**  
**Controller:** Cummins PC80; **Transfer Switch:** Cummins 3 Poles A/B/C; **Solid Neutral:** Cummins; **Power Supply:** Delta Electronics Group; **Surge Suppressor:** Square D Display, Square D Suppressor; **Solenoid:** Cummins; **Manual Switch:** Cummins; **NEMA Rating:** 4X; **Amperage:** 2000; **Voltage:** 480V

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
1854	55.1	46.4	90.1	7.54	5.07	16.98

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)	
CBC 2019	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	2.13	0.85	
		3.20	0.0						

**Test Mounting Details:**



Unit was rigid mounted to test fixture using six (6) 5/8" Grade 8 bolts with 1/2" plate washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 4</b>
<b>Model Line:</b> CXR Automatic Transfer Switches	
<b>Model Number:</b> CXRG8, 4 Pole <b>Serial Number:</b> N/A	

**Product Construction Summary:**  
G-Frame, Stainless Steel, NEMA 4X

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 4 Poles A/B/C/N; **Surge Suppressor:** Square D Suppressor; **Solenoid:** Cummins; **Manual Switch:** Cummins; **NEMA Rating:** 4X; **Amperage:** 2000; **Voltage:** 208V

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
2,159	55.1	46.4	90.1	11.95	5.49	5.79

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)	
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79	
		2.96	0.0						

**Test Mounting Details:**  
Unit pictured is UUT4 in OSP (disregard UUT7 label in photo)



Unit was rigidly mounted to test fixture using sixteen (6) 5/8" Grade 8 bolts with flat washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



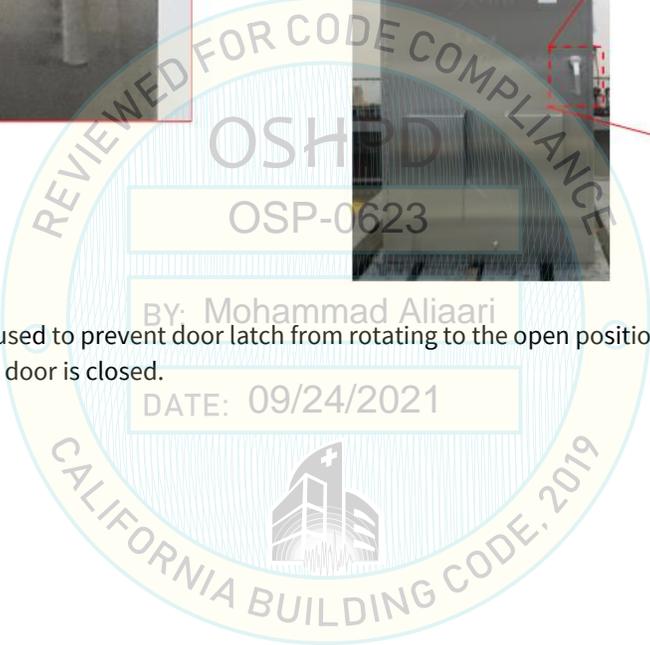
**Manufacturer:** Cummins Power Generation  
**Model Line:** CXR Automatic Transfer Switches  
**Model Number:** CXRG8, 4 Pole

**Serial Number:** N/A

**UUT 4**

**Seismic Upgrades Implemented:**

A bolt was used to lock the door latch in the closed position for the front and rear door panels.



During installation a lock must be used to prevent door latch from rotating to the open position during a seismic event. Latch should be locked at all times when door is closed.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 5</b>
<b>Model Line:</b> CXT Automatic Transfer Switches	
<b>Model Number:</b> CXTD8, 4 Pole <b>Serial Number:</b> N/A	

**Product Construction Summary:**  
D-Frame, Carbon Steel, NEMA 3R

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 4 Poles A/B/C/N; **Solenoid:** Cummins; **Surge Suppressor:** Square D Suppressor; **NEMA Rating:** 3R; **Amperage:** 800; **Voltage:** 208V

UUT Properties						
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
851	28.3	38.1	62.8	11.27	21.72	>33.3

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)	
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79	
		2.96	0.0						

**Test Mounting Details:**  
Unit pictured is UUT5 in OSP (disregard UUT11 label in photo)



Unit was rigid mounted to test fixture using four (4) 3/8" Grade 8 bolts with 3/8" flat washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 6</b>
<b>Model Line:</b> CXT Automatic Transfer Switches	
<b>Model Number:</b> CXTD8, 4 Pole	
<b>Serial Number:</b> N/A	

**Product Construction Summary:**  
D-Frame, Stainless Steel, NEMA 4X

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 4 Poles A/B/C/N; **Solenoid:** Cummins; **Surge Suppressor:** Square D Suppressor; **NEMA Rating:** 4X; **Amperage:** 800; **Voltage:** 208V

**UUT Properties**

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
801.5	28.3	38.1	62.8	8.93	13.06	10.78

**UUT Highest Passed Seismic Run Information**

Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79
		2.96	0.0					

**Test Mounting Details:**



Unit was rigid mounted to test fixture using four (4) 3/8" Grade 8 bolts with 3/8" flat washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 7</b>
<b>Model Line:</b> CXT Automatic Transfer Switches	
<b>Model Number:</b> CXC8, 3 Pole	
<b>Serial Number:</b> N/A	

**Product Construction Summary:**  
C-Frame, Carbon Steel, NEMA 1

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 3 Poles A/B/C; **Solid Neutral:** Cummins; **Floor Stand:** Cummins; **NEMA Rating:** 1; **Amperage:** 600; **Voltage:** 208V

UUT Properties						
Weight <sup>1</sup> (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height <sup>2</sup>	Front-Back	Side-Side	Vertical
554.5	25	38.1	62.8	8.86	18.97	17.37

<sup>1</sup>Weight does not include weight of 260 lbs. floor stand (Total Weight = 814.5 lbs.)

<sup>2</sup>Height does not include height of floor stand (Total Height = 86.3 in)

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)	
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79	
		2.96	0.0						

**Test Mounting Details:**  
Unit pictured is UUT7 in OSP (disregard UUT5 label in photo)



Unit was rigid mounted to wall test fixture using four (4) 3/8" Grade 8 bolts, and attached at the base with four (4) 3/8" Grade 8 bolts to the floor stand. The floor stand was rigid mounted at base using four (4) 3/8" 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.

# UNIT UNDER TEST (UUT) SUMMARY SHEET

1801393-CR-001-R4



<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 8</b>
<b>Model Line:</b> CXT Automatic Transfer Switches	
<b>Model Number:</b> CXTD8, 4 Pole <b>Serial Number:</b> N/A	

**Product Construction Summary:**  
D-Frame, Carbon Steel, NEMA 4 & 12

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 4 Poles A/B/C/N; **Solenoid:** Cummins; **Surge Suppressor:** Square D Suppressor; **Floor Stand:** Cummins; **NEMA Rating:** 4 & 12; **Amperage:** 800A; **Voltage:** 480V

UUT Properties						
Weight <sup>1</sup> (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height <sup>2</sup>	Front-Back	Side-Side	Vertical
856	28.3	38.1	62.8	8.88	21.89	24.67

<sup>1</sup>Weight does not include weight of 279 lbs. floor stand (Total Weight = 1135 lbs.)

<sup>2</sup>Height does not include height of floor stand (Total Height = 86.3 in)

UUT Highest Passed Seismic Run Information									
Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>p</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)	
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79	
		2.96	0.0						

**Test Mounting Details:**  
Unit pictured is UUT8 in OSP (disregard UUT6 label in photo)



Unit was rigid mounted to wall test fixture using four (4) 3/8" Grade 8 bolts, and attached at the base with four (4) 3/8" Grade 8 bolts to the floor stand. The floor stand was rigid mounted at base using four (4) 3/8" 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.

# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801393-CR-001-R4

<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 9</b>
<b>Model Line:</b> CXS Automatic Transfer Switches	
<b>Model Number:</b> CXSB8, 4 Pole <b>Serial Number:</b> N/A	

**Product Construction Summary:**  
B-Frame Basic, Carbon Steel, NEMA 1

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 4 pole A/B/C/N; **Transformer:** Hammond HPS; **Solenoid:** Cummins; **Surge Suppressor:** Square D Suppressor; **NEMA Rating:** 1; **Amperage:** 400; **Voltage:** 480V

**UUT Properties**

Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
248	12.5	28	45.5	9.96	8.89	22.76

**UUT Highest Passed Seismic Run Information**

Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79
		2.96	0.0					

**Test Mounting Details:**

Unit pictured is UUT9 in OSP (disregard UUT3 label in photo)



Unit was rigid wall mounted to test fixture using four (4) 3/8" Grade 8 bolts with 3/8" flat washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.

# UNIT UNDER TEST (UUT) SUMMARY SHEET



1801393-CR-001-R4

<b>Manufacturer:</b> Cummins Power Generation	<b>UUT 10</b>
<b>Model Line:</b> CXS Automatic Transfer Switches	
<b>Model Number:</b> CXSB8, 4 Pole <b>Serial Number:</b> N/A	

**Product Construction Summary:**  
B-Frame Basic, Carbon Steel, NEMA 3R

**Options/Subcomponent Summary:**  
**Transfer Switch:** Cummins 4 pole A/B/C/N; **Transformer:** Hammond HPS; **Solenoid:** Cummins; **NEMA Rating:** 3R; **Amperage:** 400; **Voltage:** 480V

**UUT Properties**

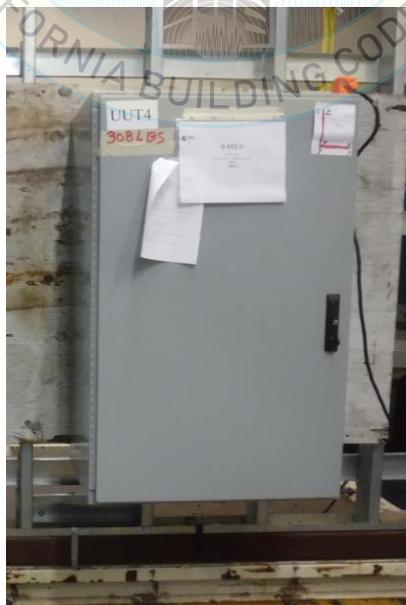
Weight (lb)	Dimension (in)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
308	16.9	28	45.5	9.98	14.43	12.41

**UUT Highest Passed Seismic Run Information**

Building Code	Test Criteria	S <sub>DS</sub> (g)	z/h	I <sub>P</sub>	A <sub>FLX-H</sub> (g)	A <sub>RIG-H</sub> (g)	A <sub>FLX-V</sub> (g)	A <sub>RIG-V</sub> (g)
CBC 2019	ICC-ES AC156	1.85	1.0	1.5	2.96	2.22	1.97	0.79
		2.96	0.0					

**Test Mounting Details:**

Unit pictured is UUT10 in OSP (disregard UUT4 label in photo)



Unit was rigid wall mounted to test fixture using four (4) 3/8" Grade 8 bolts with 3/8" flat washers.  
Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.  
Contents were included in testing per operating conditions.