APPLICATION FOR OSHPD SPECIAL SEISMIC **CERTIFICATION PREAPPROVAL (OSP)** APPLICATION #: OSP - 0068 - 10 **OSHPD Special Seismic Certification Preapproval (OSP) Manufacturer Information** Manufacturer: Systecon Manufacturer's Technical Representative: Stu Barrick Mailing Address: 6121 Schumacher Park Drive, West Chester, Ohio 45069 Telephone: (513) 777-7722 Email: Stu.barrick@systecon.com **Product Information** Product Name: HVAC Control Panels **HVAC Control Panels** Product Type: Product Model Number: See tables for components included (List all unique product identification numbers and/or part numbers) Configurable control panels for HVAC applications. Seismic enhancement made to the test General Description: units to address anomalies observed during testing shall be incorporated into production units. Wall mounted rigid or spring isolated Mounting Description: **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: 844-878-0200 Email: greid@structint.com I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016. Signature of Applicant: Date: 9/27/2018 Title: Senior Engineer Company Name: TRU Compliance, by Structural Integrity Associates, Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs'





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OFFICE USE ONLY

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)									
Company Name: TRU Compliance, by Structural Integrity Associates, Inc.									
Name: Andrew M. Coughlin California License Number: S6082									
Mailing Address: _5215 Hellyer Ave., Suite 210, San Jose, CA 95138									
Telephone: 844-878-0200 Email: acoughlin@structint.com									
Supports and Attachments Preapproval									
Supports and attachments are preapproved under OPM- (Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)									
Supports and attachments are not preapproved									
Certification Method									
Testing in accordance with: Other (Please Specify): OSP-0068-10 BY: Ali Sumer									
Testing Laboratory DATE: 05/02/2019									
Company Name: Clark Testing									
Contact Name: Devon Lohr									
Mailing Address: 1801 Route 51, Jefferson Hills, PA 15025									
Telephone: 412-387-1001 Email: dlohr@clarktesting.com									



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OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters
Design in accordance with ASCE 7-10 Chapter 13: ⊠ Yes ☐ No
Design Basis of Equipment or Components (F _p /W _p) = 1.35 (rigid) or 4.23 (isolated)
S _{DS} (Design spectral response acceleration at short period, g) = 1.88 (z/h = 1.0); 2.00 (z/h = 0.0)
a _p (In-structure equipment or component amplification factor) = 1.0 (rigid) or 2.5 (isolated)
R _p (Equipment or component response modification factor) =2.5 (rigid) or 2.0 (isolated)
Ω_0 (System overstrength factor) =2.0
I _p (Importance factor) = 1.5
z/h (Height factor ratio) =1.0, 0.0
Equipment or Component Natural Frequencies (Hz) = N/A
Overall dimensions and weight (or range thereof) = See product matrices
Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: Yes No
Design Basis of Equipment or Components (V/W) =
S _{DS} (Design spectral response acceleration at short period, g) =
S _{D1} (Design spectral response acceleration at 1 second period, g) =
R (Response modification coefficient) = OSP-0068-10
Ω_0 (System overstrength factor) =
C _d (Deflection amplification factor) = BY:Ali Sumer
I _P (Importance factor) = 1.5
Height to Center of Gravity above base =
Equipment or Component Natural Frequencies (Hz) =
Overall dimensions and weight (or range thereof) =
Tank(s) designed in accordance with ASME BPVC, 2015: ☐ Yes ☑ No
List of Attachments Supporting Special Seismic Certification
☐ Test Report(s) ☐ Drawings ☐ Calculations ☐ Manufacturer's Catalog
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022
1 Lie
Signature: Date: May 2, 2019
Print Name: Ali Sumer Title: DSE
Special Seismic Certification Valid Up to : S _{DS} (g) = See Above z/h = See Above
Condition of Approval (if applicable):

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"





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Manufacturer:	Systecon						TABLE 1		
	HVAC Control Panels								
Certified Product Cons	struction Summary:				_				
IEMA 1/12 carbon steel	cabinets								
Certified Options Sum									
nternal component op	tions are listed in Tabl	es 2-6							
Mounting Configuration									
Wounting Configuration Wall mounted - rigid & f			n CO	$DE \sim$					
ote: Installed mounting con		or configuratio			and stiffnes	s to those tes	sted.		
		(i)			74	1.88 g			
Building Code: CBC 20	16	Seismic C	ertification	on Limits:		2.00 g	-	/ _P = 1.5	
Madalita a		Dir	nensions	(in)	Weight	Ł.			
Model Line	Model	Depth	Width	Height	(lb)	C	Notes	UUT	
	H	8	16	12	20	(23		Extrap.	
		BY:A	II Si	ımer	WWWXX	0		Extrap.	
Hoffman Enclosures	NEMA 1/12 Enclosures	13.3	30	30	300	10		1	
		DA3TE:	053602	/2 11 9	150	7		2	
		13.3	36	60	200			3	
	(rE)	13	36	12	150			4	
		PA,			00,00				
		YA,	377	TNG	3				
			UILD	INO					

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Manufacturer:	Systecon		TABLE	2			
Model Line: HVAC Control Panels Building Code: CBC 2016		Seismic Certification	Seismic Certification Limits: $S_{DS} = 1.88 g$ z/h=1.0 $I_P = 1.0$ $S_{DS} = 2.00 g$ z/h=0.0				
Component Type	pe Manufacturer Model Description				Notes		
Ethernet Adapter	Allen Bradley	1734-AENT	24V DC Ethernet/IP Adapter			1	
		1734-IB2	24V DC 2 Point Digital Input Module			Extrap.	
		1734-IB4	24V DC 4 Point Digital Input Module			Extrap.	
Innut Madulas	Allon Drodlov	173 <mark>4-</mark> IB8	24V DC 8 Point Digital Input Module			1	
Input Modules	Allen Bradley	1734-IE8C			1		
		17 <mark>69-IQ</mark> 16	24V DC 16 Point Digital Input Module			3	
		17 <mark>69-IF</mark> 16C BY: 7	24V DC 16 Point Analog Current Input Module			3	
		1 <mark>734-O</mark> B2	24V DC 2 Point Digital Output Module			Extrap.	
		173 <mark>4-0E</mark> 4C DATE	24V DC 4 Point Analog Current Output Module			1	
Outrout Madulas	Allera Due die.	1734-OB4	24V DC 4 Point Digital Output Module			Interp.	
Output Modules	Allen Bradley	1734-OB8	24V DC 8 Point Digital Output Module			1	
		1769-OB16	24V DC 16 Point Digital Output Module			3	
		1769-OF4CI	24V DC 4 Point Isolated Analog Output Module			3	
		1769-L32E	Ethernet Processor, 750 Kbyte Memory			3	
CompactLogix	Allon Dradlov	1769-L30ER	Ethernet Processor, 1 Mbyte Memory	Identical to 1769-L32E/L3	5E (firmware & memory)	Interp.	
Controller	Allen Bradley	1769-L35E	Ethernet Processor, 1.5 Mbyte Memory			3	
		1769-L33ER	Ethernet Processor, 2 Mbyte Memory	Identical to 1769-L32E/L35E (firmware & memory)		Interp.	
Expansion Pwr Supply	Allen Bradley	1734-EP24DC	Point I/O 24V DC Expansion Power Supply			1	
Communication Mod	Allen Bradley	MVI69-MCM	Modbus Master/Slave Network Interface Mod			3	
I							

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Manufacturer: Model Line:	Systecon HVAC Control Panels			TABLE 3	
Building Code: CBC 2016		Seismic Certification	on Limits: $S_{DS} = 1.88 g z/h=1.0$ $S_{DS} = 2.00 g z/h=0.0$	I _P = 1.5	
Component Type	Manufacturer	Model	Description CODE	Notes	UUT
		WMZT1CX0	0.5A Circuit Breaker		Extrap.
		WMZT1C01	1A Circuit Breaker		3
		WMZT1CX1	1.5A Circuit Breaker		Interp.
		WMZT1C02	2A Circuit Breaker		Interp.
		WMZT1C03	3A Circuit Breaker		Interp.
		WMZT1C04	4A Circuit Breaker		Interp.
	Eaton	WMZT1C05 BY: A	5A Circuit Breaker		Interp.
Cinc it Book an		WMZT1C06	6A Circuit Breaker		Interp.
		WMZT1C07 DATE	7A Circuit Breaker 9		Interp.
Circuit Breakers		WMZT1C08	8A Circuit Breaker		Interp.
		WMZT1C10	10A Circuit Breaker		Interp.
		WMZT1C13	13A Circuit Breaker		Interp.
		WMZT1C15	15A Circuit Breaker		3
		712123	0.25A Circuit Breaker		1
		712152	0.5A Circuit Breaker		1
	Phoenix Contact	712194	1A Circuit Breaker		Interp.
		712217	2A Circuit Breaker		Interp.
		712233	3A Circuit Breaker		1
		FNQ-R-8	8A Fuse		2
Fuses	Bussman	LPJ-100SP	100A Fuse		4
Fuses	DUSSIIIdII	OPM-1038RSW	30A Fuse Disconnect	Installed with cable tie to DIN ro	nil 1-4
		J60100-3CR	100A 3 Pole Fuse Block		2,4
Power Dist. Block	Gould Shawmut	66573	Distribution Block		2,4

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Manufacturer: Systecon **Table Description:** Transformers & Power Supply **TABLE 4** Model Line: **HVAC Control Panels S**_{DS}= **1.88 g z/h=1.0** Seismic Certification Limits: Building Code: CBC 2016 $I_{P} = 1.5$ $S_{DS} = 2.00 g z/h=0.0$ **Component Type** Manufacturer Description UUT Model **Notes** 9T58K2873 120/240v,12/24v,0.05kVA 3 PT58K3164 240/480v,12/24v,0.05kVA Interp. 240/480v,120/240v,0.05kVA 9T51B0002 Interp. 9T58K2874 120/240v,12/24v,0.075kVA Interp. 9T51B0003 240/480v,120/240v,0.075kVA Interp. 9T58K2875 120/240v,12/24v,0.1kVA Interp. 120/240v,120/240v,0.1kVA 9T58K2907 Interp. PT58K4132 240/480v,12/24v,0.1kVA Interp. 9T51B0004 240/480v,120/240v,0.1kVA Interp. 9T58K2876 120/240v,12/24v,0.15kVA Interp. **Transformers** PT58K4133 240/480v,12/24v,0.15kVA Interp. Open Core and Coil GE 240/480v,120/240v,0.15kVA 9T51B0005 Interp. Copper 9T58K2878 120/240v,12/24v,0.25kVA Interp. PT58K3024 240/480v,12/24v,0.25kVA Interp. 9T51B0007 240/480v,120/240v,0.25kVA Interp. PT58K2913 120/240v,120/240v,0.5kVA Interp. 9T51B0008 240/480v,120/240v,0.5kVA Interp. PT58K2914 120/240v,120/240v,0.75kVA Interp. 9T51B0009 240/480v,120/240v,0.75kVA Interp. PT58K2915 120/240v,120/240v,1kVA Interp. 240/480v,120/240v,1kVA 9T51B0010 Interp. 9T51B0011 240/480v,120/240v,1.5kVA 2,4 **IDEC** PS5R-SF24 Slimline Power Supply **Power Supply**

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Manufacturer: Systecon **Table Description:** Communication Interfaces **TABLE 5** Model Line: **HVAC Control Panels** S_{DS}= 1.88 g z/h=1.0 Building Code: CBC 2016 Seismic Certification Limits: $I_{P} = 1.5$ **S**_{DS} = **2.00 g z/h=0.0 Component Type** Description Manufacturer UUT Model **Notes** НМІ **Parker Automation** PA10T 10" Screen 3 **BACnet Portal OEMCtrl** OEMPrtl Pro Communication Interface 3 Linksys BEFSR81 8 Port Router Router 3 **Ethernet Switch** Phoenix Contact 2891152 5 Port Switch 1 Switch/Modem SL-5MS-MDM-1 5 Port Combo Unit Sixnet 3 SLTA-10 Adapter 3 LONWorks Interface Echelon Power Supply C1 Adapter Power Supply 3

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Table Description: Relays & Operators Manufacturer: Systecon **TABLE 6** Model Line: **HVAC Control Panels** S_{DS}= 1.88 g z/h=1.0 Building Code: CBC 2016 Seismic Certification Limits: $I_{P} = 1.5$ **S**_{DS} = **2.00 g z/h=0.0 Component Type** Description Manufacturer Model UUT **Notes** MY2N DC6 6VDC Control Relay Extrap. 12VDC Control Relay MY2N DC12 Extrap. 12VAC Control Relay MY2N AC12 Extrap. 24VDC Control Relay MY2N DC24 2-Pole Relays with 1 Omron 24VAC Control Relay relay clip MY2N AC24 Interp. MY2N DC48 48VDC Control Relay Interp. 110VDC Control Relay MY2N DC100/110 Interp. MY2N AC110/120 120VAC Control Relay 3 Signal Conditioner Isolator Weidmuller 8594840000 1,3 2 position Selector Switch 3 **Selector Switches** Baco 3 position Selector Switch 3





Manufacturer: Model Line:	Systecon HVAC Control Panels					
UUT UUT	Unit Description	Report Number	Testing Laboratory	S _{DS}	z/h	I _P
1	13x30x30 Panel	T4984 (Small units - bottom)	Clark Testing	1.88 2.0	1.0 0.0	1.5
2	13x36x12 Panel	T4984 (Small units - Top)	Clark Testing	1.88 2.0	1.0 0.0	1.5
3	13x36x60 Panel	T4984 (Large units - bottom)	Clark Testing	1.88 2.0	1.0 0.0	1.5
4	13x36x12 Panel	T4984 (Large units - Top) F	Clark Testing	1.88 2.0	1.0 0.0	1.5
		(S) OCH DE	OMP			
		OSP-0068-10	E			
	A		C H			
	0	BY:All Sumer	0			
	PE	DATE: 05/02/201	9 702			
		RAY	, OD			
		BUILDING	CO			
Notes:						

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UUT 1

Manufacturer: Systecon

Model Line: HVAC Control Panels

Model Number: N/A Serial Number: N/A

ICC-ES AC156 (2015)

Product Construction Summary:

NEMA 1/12 Sheet Metal Carbon Steel Cabinet

Units tested mounted to steel frame and skid. Units tested on rigidly mounted skid (Run #1) and seismically restrained vibration isolated skid (Run #2)

Options/Subcomponent Summary:

See tables 2-6 for a detailed listing of components within UUT

			UUT Propert	ies					
Weight		Dimension (in)		Lowest Natural Frequency (Hz)					
(lb)	Depth Width		Height	Fro	Front-Back		Side-Side		tical
300	13.3	A 30	30	-10	N/A G	N/A		N/A	
		UUT Highest P	Passed Seismi	Run Infor	mation			,	
Building Code		Test Criteri	a S _{DS}	g) z/h	I _P	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
		WWW.XXXXXXXXXX	W/////////////////////////////////////	8 10	1.5				

2.0

Test Mounting Details:

CBC 2016





1.5

0.0



Run #1 Rigid mounted

2.26

1.33

0.53

3.01

Run #2 Isolated skid

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Unit mounted to frame/skid using (4) 7/16" A325 bolts

Direct Mount: Skid mounted to table using (8) 1/2" Grade 5 bolts

Isolation Mount: (4) Mason isolators attach to assembly using (2) ½" Grade 5 bolts each. Isolators welded to the table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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Manufacturer: Systecon

Model Line: HVAC Control Panels

UUT 2

Model Number: N/A Serial Number: N/A

Product Construction Summary:

NEMA 1/12 Sheet Metal Carbon Steel Cabinet

Units tested mounted to steel frame and skid. Units tested on rigidly mounted skid (Run #1) and seismically restrained vibration isolated skid (Run #2)

Options/Subcomponent Summary:

See tables 2-6 for a detailed listing of components within UUT

UUT Properties Weight Dimension (in) Lowest Natural Frequency (Hz) (lb) Side-Side Vertical Depth Width Height Front-Back 150 13 36 12 N/A N/A N/A **UUT Highest Passed Seismic Run Information** Test Criteria **Building Code** $S_{DS}(g)$ z/h I_p $A_{FLX-H}(g) | A_{RIG-H}(g) | A_{FLX-V}(g) | A_{RIG-V}(g)$ 1.88 1.0 1.5 3.01 2.26 1.33 0.53 CBC 2016 ICC-ES AC156 (2015) /2,00 0.0 1.5

Test Mounting Details:







Run #1 Rigid mounted

Run #2 Isolated skid

Unit mounted to frame/skid using (4) 7/16" A325 bolts

Direct Mount: Skid mounted to table using (8) 1/2" Grade 5 bolts

Isolation Mount: (4) Mason isolators attach to assembly using (2) ½" Grade 5 bolts each. Isolators welded to the table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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UUT3

Manufacturer: Systecon

Model Line: HVAC Control Panels

Model Number: N/A Serial Number: N/A

Product Construction Summary:

NEMA 1/12 Sheet Metal Carbon Steel Cabinet

Units tested mounted to steel frame and skid. Units tested on rigidly mounted skid (Run #1) and seismically restrained vibration isolated skid (Run #2). 30A Fused disconnect secured to DIN rail using cable tie.

Options/Subcomponent Summary:

See tables 2-6 for a detailed listing of components within UUT

		TUUT	Properties	10	1						
Weight		Dimension (in)			Lowest Natural Frequency (Hz)						
(lb)	Depth	Width	Height		Front-Back		Side-Side		Vertical		
200	13.3	36	60	N/A C		N/A 🤮		N	/A	N/A	
		UUT Highest Passe	d Seismic Run	<i>Informa</i>	ation						
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 2016		CC-FS AC156 (2015)	1.88	1.0	1.5	2.01	2.26	1 22	0.53		
		ILL-E3 AL 156 (7015)				3.01	2.26	1.33	0.53		

 $0.0 \ 2 \ 2.00 \ 19 \ 0.0$

Test Mounting Details:







Run #1 Rigid mounted

Run #2 Isolated skid

Unit mounted to frame/skid using (4) 7/16" A325 bolts

Direct Mount: Skid mounted to table using (8) 1/2" Grade 5 bolts

Isolation Mount: (4) Mason isolators attach to assembly using (2) ½" Grade 5 bolts each. Isolators welded to the table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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UUT 4

Manufacturer: Systecon

Model Line: HVAC Control Panels

Model Number: N/A Serial Number: N/A

ICC-ES AC156 (2015)

Product Construction Summary:

NEMA 1/12 Sheet Metal Carbon Steel Cabinet

Units tested mounted to steel frame and skid. Units tested on rigidly mounted skid (Run #1) and seismically restrained vibration isolated skid (Run #2)

Options/Subcomponent Summary:

See tables 2-6 for a detailed listing of components within UUT

					- / \							
			UUT Pro	perties	10							
Weight		Dimension (in)				Lowest Natural Frequency (Hz)						
(lb)	Depth Width		Height		Front-Back		Side-Side		Vertical			
150	13	36	12	08-10	N	N/A C N/A		N/A C		N/A		/A
-		UUT Highest	Passed Sei	ismic Run	Informa	ation						
Building Code		Test Criter	ia 1 S	S _{DS} (g)	z/h	l _p	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)		
		KYVXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	WWW.	1 00	1.0	1.5						

2.0

Test Mounting Details:

CBC 2016





1.5

0.0



Run #1 Rigid mounted

2.26

1.33

0.53

3.01

Run #2 Isolated skid

TRU Compliance, by Structural Integrity Associates, Inc.

Unit mounted to frame/skid using (4) 7/16" A325 bolts

Direct Mount: Skid mounted to table using (8) ½" Grade 5 bolts

Isolation Mount: (4) Mason isolators attach to assembly using (2) ½" Grade 5 bolts each. Isolators welded to the table. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test. Contents were included in testing per operating conditions.

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