



APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO.
OSP -0270-10

Check whether application is: NEW RENEWAL

1.0	Emerson Network Power	Tracy McCoy / Dave Dukes
	<i>Manufacturer</i>	<i>Manufacturer's Technical Representative</i>
	1050 Dearborn Drive	Columbus OH 43095
	<i>Mailing Address</i>	
	(614)841-5744 / (614) 841-5967	Tracy.McCoy@emerson.com / dave.dukes@emerson.com
	<i>Telephone</i>	<i>E-mail Address</i>

2.0	Liebert DA125 Air Cooled / EconoPhase Refrigerant Economizer	Cooling Unit / Single & Double Pump Economizers
	<i>Product Name</i>	<i>Product Type</i>
	DA125DA1A / PR125A	
	<i>Product model No (List all unique product identification numbers and/or serial numbers)</i>	

General Description: Rigid Mounted Liebert Precision Cooling System products. Specifically, a single unit DA125 air-cooled and several PR125A pumped refrigerant models. Modifications made to test units before/during test and modifications required to address anomalies observed during test shall be incorporated into production units. Certification *excludes* expansion valves, compressors, evaporators, and condensing portions of the refrigerate system.

3.0	Emerson Network Power	Tracy McCoy / Dave Dukes
	<i>Applicant Company Name</i>	<i>Contact Person</i>
	1050 Dearborn Drive	Columbus OH 43095
	<i>Mailing Address</i>	
	(614)841-5744 / (614) 841-5967	Tracy.McCoy@emerson.com / dave.dukes@emerson.com
	<i>Telephone</i>	<i>E-mail Address</i>

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.



22-June-2012

Signature of Applicant

Date

Sr. Design Eng. / Sr. Project Eng.

Emerson Network Power

Title

Company Name



Registered Design Professional Preparing the Report

4.0 Buehler and Buehler Structural Engineers, Inc
Company Name

Ryan J Miller, P.E., S.E. / George A. McCluskey P.E. C70940, S5556 / C77344
Contact Name *California License Number*

600 Q Street Suite 200 Sacramento, CA 95811
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(916) 443-0303 rmiller@bbse.com / gmccluskey@bbse.com
Telephone *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0 Buehler and Buehler Structural Engineers, Inc
Company Name

Scott R. Hooker 3937 / Structural
Contact Name *California License Number*

600 Q Street Suite 200 Sacramento, CA 95811
Mailing Address

(916) 443-0303 shooker@bbse.com
Telephone *E-mail Address*

Anchorage Pre-Approval

6.0 Anchorage is pre-approved under OPA-
 (Separate application for anchorage pre-approval is required)

Anchorage is not Pre-approved

Certification Method

7.0 Testing in accordance with: ICC-ES AC-156 Other (Please Specify):

Analysis

Experience data

Combination of Testing, Analysis, and/or Experience Data (Please Specify):

Testing Laboratory (if applicable)

8.0 Clark Dynamic Test Laboratory, Inc. John R. Antenucci
Company Name *Contact Name*

1801 Route 51 Jefferson Hills, PA 15025
Mailing Address

(412) 387-1010 jrantenucci@clarkdynamic.com
Telephone *E-mail:*



Approval Parameters

9.0 Design in accordance with ASCE 7-05 Chapter 13: Yes No
 Design Basis of Equipment or Components (F_p/W_p) = 1.24 for DA125

1.4 for PR125A dbl pump, 1.8 for PR125A single pump

S_{DS} (Spectral response acceleration at short period) = 1.65g for DA125

2.0 for PR125A dbl pump, 2.5 for PR125A single pump

a_p (In-structure equipment or component amplification factor) = 2.5 for DA125, 1.0 for PR125A

R_p (Equipment or component response modification factor) = 6.0 for DA125, 2.5 for PR125A

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component fundamental period(s) = See Table 3 for DA125. See Table 5 for PR125A

Building period limits (if any) = N/A

Overall dimensions and weight (or range thereof) = See Table 1 for DA125. See Table 2 for PR125A

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: Yes No

Design Basis of Equipment or Components (V/W) =

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient) = 1.0

Ω_0 (System overstrength factor) = 1.0

C_d (Deflection amplification factor) = 1.0

I_p (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: Yes No

10.0 List of attachments supporting the special seismic certification of equipment or components:

- Test Report Drawings Manufacturer's Catalog
- Calculations Others (Please Specify): Operability Test Letters

11.0 OSHPD Approval (For Office Use Only)


 Signature & Date

Timothy J. Piland, SSE

Name & Title

January 28, 2013

December 31, 2019

Approval Expiration Date

S_{DS} (g) = **See Section 9.0** z/h = **1.0**

Special Seismic Certification Valid Up to

Condition of Approval (if any):



**Special Seismic Certification
OSHPD Preapproval
Liebert DA125**



Table 1. Certified Product Table DA125

Liebert DA125 Air Cooled

Model Number	Description	Rated kW	Tested / Interpolated	Length	Width	Height	Operating Weight
				(in)	(in)	(in)	(lbs)
DA125DA1A	DA125 Air Cooled	125	UUT-2	144	48	94	3960



**Special Seismic Certification
OSHPD Preapproval
Liebert DA125**



Table 1A. Certified Product Sub-Component Table DA125

Liebert DA125 Air Cooled

UUT #2: DA125 Air Cooled				
<i>Sub-Component</i>	<i>Material</i>	<i>Description</i>	<i>Manufacturer</i>	<i>Part Number</i>
Exterior Panels	carbon steel	20 gauge double skin panel	Emerson Network Power	304363G3
Humidifier	galvanized carbon steel / aluminum	Infrared 22 lb/hr	Emerson Network Power	305012
Reheat	galvanized carbon steel	Electric 30kW	Emerson Network Power	305011
Drainage	plastic, aluminum, carbon steel	condensate pump	Emerson Network Power	1A19271
Fan & Motor	aluminum, carbon steel, copper	2.8 HP	EBM Papst	197183
Transformer	carbon steel, copper	575V unit only, core cut type 3ph winding	Emerson Network Power	303370
Filter Plenum	carbon steel	18" tall	Emerson Network Power	196957
Electric Control Panel	carbon steel	high and low voltage	Emerson Network Power	305000
Compressor	carbon steel, copper	Tandem digital scroll	Emerson Climate Technologies	306007
Expansion Valve	brass, copper, carbon steel	Electronic expansion valve	Emerson Climate Technologies	300739P1
Floorstand	carbon steel tubes	24" tall, 45" x 144"	Emerson Network Power	307181



**Special Seismic Certification
OSHPD Preapproval
Liebert PR125A**



Table 2. Certified Product Table PR125A
Liebert PR125A

Model Number	Nominal kW	Tested/ Interpolated	Length	Width	Height	Operating Weight*
			(in)	(in)	(in)	(lbs)
PR125AA5S	63	extrapolated	42	36	40	314
PR125AB5S	63	extrapolated	42	36	40	314
PR125AC5S	63	UUT-1	42	36	40	314
PR125AD5S	63	Interpolated	42	36	40	314
PR125A25S	63	Interpolated	42	36	40	314
PR125AA6S	63	Interpolated	42	36	40	314
PR125AB6S	63	Interpolated	42	36	40	314
PR125AC6S	63	Interpolated	42	36	40	314
PR125AD6S	63	Interpolated	42	36	40	314
PR125A26S	63	Interpolated	42	36	40	314
PR125AA5D	125	Interpolated	42	36	40	437
PR125AB5D	125	Interpolated	42	36	40	437
PR125AC5D	125	Interpolated	42	36	40	437
PR125AD5D	125	Interpolated	42	36	40	437
PR125A25D	125	Interpolated	42	36	40	437
PR125AA6D	125	Interpolated	42	36	40	437
PR125AB6D	125	UUT-2	42	36	40	437
PR125AC6D	125	extrapolated	42	36	40	437
PR125AD6D	125	extrapolated	42	36	40	437
PR125A26D	125	extrapolated	42	36	40	437



Special Seismic Certification OSHPD Preapproval Liebert PR125A



Table 2A. Certified Product Sub-Component Table PR125A
Liebert PR125A

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Pump	Centrifugal with integral 1.6 HP motor, 208/230/460, 6GPM@75Ft.	Stainless steel/cast iron	MTH	ELNPHPI410D012611	UUT-1 & UUT-2

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Control Box	NEMA 3R, Houses control and unit elec. parts 1 pump, 208/230V	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	310099G1	UUT-2
Control Box	NEMA 3R, Houses control and unit elec. parts 1 pump, 460V	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	310099G2	Interpolated
Control Box	NEMA 3R, Houses control and unit elec. parts 1 pump, 575V	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	310099G3	Interpolated
Control Box	NEMA 3R, Houses control and unit elec. parts 2 pump, 208/230V	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	304910G1	Interpolated
Control Box	NEMA 3R, Houses control and unit elec. parts 2 pump, 460V	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	304910G2	Interpolated
Control Box	NEMA 3R, Houses control and unit elec. parts2 pump, 575V	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	304910G3	UUT-1

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Disconnect	Unit power switch	-	ABB	OT25F3	UUT-2
Disconnect	Unit power switch, fused	-	ABB	OS30FAJ12	UUT-1

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Controller	Premium	-	Jabil	2351988	UUT-1 & UUT-2

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
VFD	Pump speed control 200/240V	-	Control Techniques	SKCD200220	UUT-2
VFD	Pump speed control 380/460V	-	Control Techniques	SKC3400220	UUT-1

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Pressure Transducers	0-500psi, 0.5-4.5VDC output	Brass body	Sensata Technologies	2CP5-71-47	UUT-2
Pressure Transducers	0-500psi, 0.5-4.5VDC output	Brass body	Kavlica	P528-500-S-C2C	UUT-1

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Transformer	600 to 480V, 60Hz, 3phase 7kVA	-	Rex Power Magnetics	RC7J1-H/T80/C&C/X	UUT-1

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Unit Body	Cabinet	Aluminum back, top, sides and removable covers	Liebert	304879G1	UUT-1 & UUT-2

Sub-Component	Description	Material	Manufacturer	Part Number	Tested / Interpolated
Unit Base	Base Structure	Galvanized carbon steel structure	Liebert	304890G1	UUT-1 & UUT-2

Table 3. UUT Summary Table DA125^{1,4}
Liebert DA125 Air Cooled

Model Number	Function/Size	UUT Mark	Specimen Designation	Mounting	Length	Width	Height	Weight ²	Excitation Direction ³	Frequency
					(in)	(in)	(in)	(lbs)		(Hz)
DA125DA1A	DA125	UUT-2	Air Cooled	Welded to 24" floorstand. Floorstand bolted to table	144	48	94	3960	F-B	3.8
									S-S	14.8
									V	12.3

Notes:

1. Tested Sept 1, 2011 at Clark Dynamic Laboratory, Report No. EL:9954
2. Weight as tested
3. Excitation Direction: F-B = front to back; S-S = side to side; V = vertical
4. Tested with 1/8" neoprene pad at base attachment

Test Setup Photos

Liebert DA125 Air Cooled

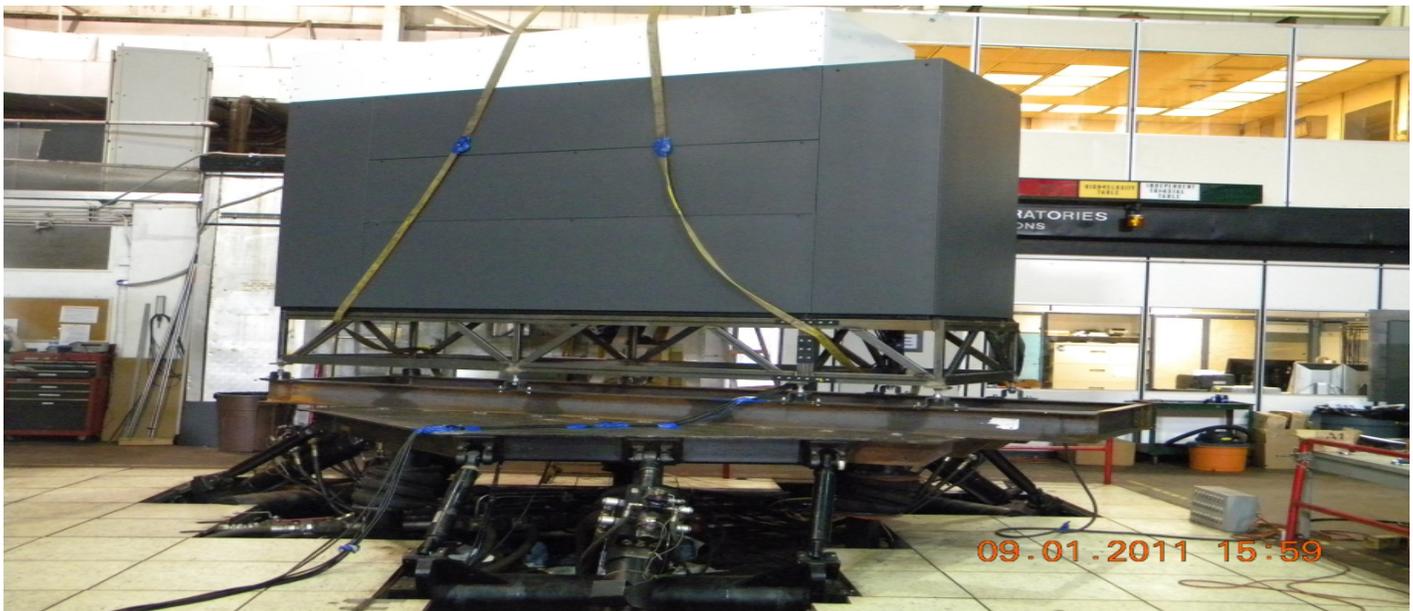


Figure 1: DA125 Air Cooled on 24" floorstand.
Attachment method: Unit welded to floorstand; floorstand bolted w/ 1/2" bolts to table



Special Seismic Certification OSHPD Preapproval Liebert DA125



Table 4. Nomenclature DA125
Liebert DA125 Air Cooled

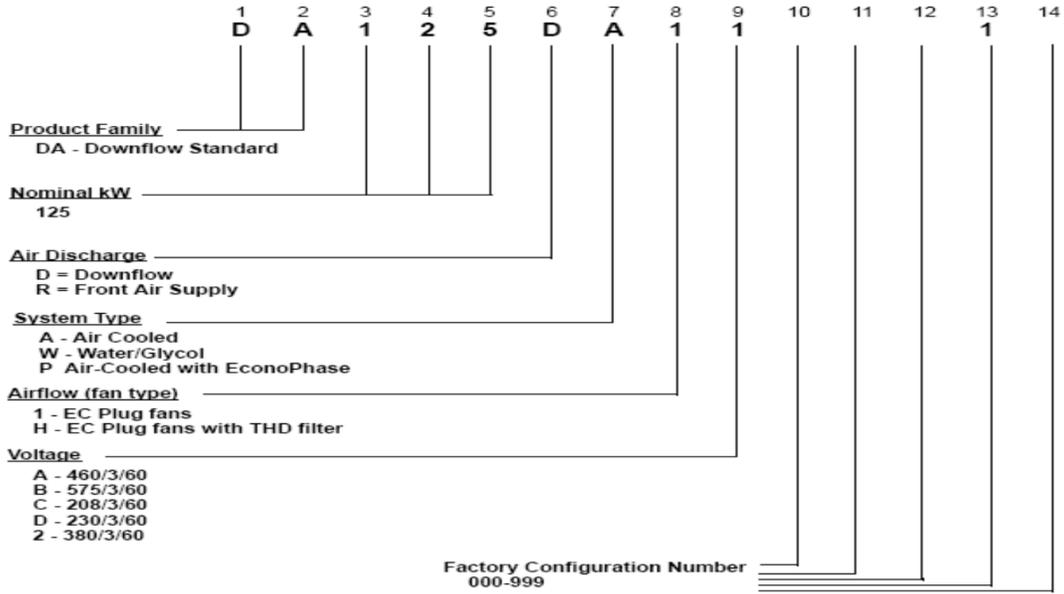


Table 5. UUT Summary Table PR125A¹
Liebert PR125A

Model Number	Rated kW	UUT Mark	Specimen Designation	Mounting	Length	Width	Height	Weight ²	Excitation Direction ³	Frequency	Notes
					(in)	(in)	(in)	(lbs)		(Hz)	
PR125AB6D	125	UUT-1	PR125AB6D	Base - Hard Mounted	42	36	40	437	F-B	20.8	Dual pump Min. SCCR 65000A
									S-S	21.8	
									V	21.4	
PR125AC5S	63	UUT-2	PR125AC5S	Base - Hard Mounted	42	36	40	317	F-B	21.8	Single pump Min. SCCR 5000A
									S-S	25.8	
									V	20.9	

1. Tested at Clark Dynamics Testing Laboratory Report No.:EL:10088
2. Weight as tested
3. Excitation Direction: F-B = front to back, S-S = side to side, V = vertical

Test Parameters

$S_{DS} = 2.0$ for dual pump

$A_{FLEX-H} = 3.20$ (g) $A_{RIG-H} = 2.40$ (g)
 $A_{FLEX-V} = 1.34$ (g) $A_{RIG-V} = 0.54$ (g)

$S_{DS} = 2.5$ for single pump

$A_{FLEX-H} = 4.00$ (g) $A_{RIG-H} = 3.20$ (g)
 $A_{FLEX-V} = 1.68$ (g) $A_{RIG-V} = 0.68$ (g)

$z/h = 1.0$ for all units

Test Setup Photos



Figure 1. UUT-1 with 2" base steel plate placed on shake table. UUT-1 is bolted to the 2" base plate.
Anchorage: 4-3/8" dia. grade 5 bolts on front/back of unit



Figure 2. UUT-2 with 2" base steel plate placed on shake table. UUT-2 is bolted to the 2" base plate.
Anchorage: 4-3/8" dia. grade 5 bolts on front/back of unit



Special Seismic Certification OSHPD Preapproval Liebert PR125A



Table 6. UUT Sub-Component Table PR125A
Liebert PR125A

UUT #1: PR125AB6D (575/3ph/60Hz)				
Sub-Component	Description	Material	Manufacturer	Part Number
Pump	Centrifugal with integral 1.6 HP motor, 208/230/460, 6GPM@75Ft.	Stainless steel/cast iron	MTH	ELNPHPI410D012611
Control Box	NEMA 3R, Houses control and unit elec. parts	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	304910G3
Disconnect	Unit power switch, fused	-	ABB	OS30FAJ12
Controller	Premium	-	Jabil	2351988
VFD	Pump speed control	-	Control Techniques	SKC3400220
Pressure Transducers	0-500psi, 0.5-4.5VDC output	Brass body	Sensata Technologies	2CP5-71-47
			Kavlica	P528-500-S-C2C
Transformer	600 to 480V, 60Hz, 3phase 7kVA	-	Rex Power Magnetics	RC7J1-H/T80/C&C/X
Unit Body	Cabinet	Aluminum back, top, sides and removable covers	Liebert	304879G1
Unit Base	Base Structure	Galvanized carbon steel structure	Liebert	304890G1

UUT #2: PR125AC5S (208/3ph/60Hz)				
Sub-Component	Description	Material	Manufacturer	Part Number
Pump	Centrifugal with integral 1.6 HP motor, 208/230/460, 6GPM@75Ft.	Stainless steel/cast iron	MTH	ELNPHPI410D012611
Control Box	NEMA 3R, Houses control and unit elec. parts	Galvanized carbon steel bottom and back plane with aluminum sides, top and hinged cover	Liebert	304910G1
Disconnect	Unit power switch	-	ABB	OT25F3
Controller	Premium	-	Jabil	2351988
VFD	Pump speed control	-	Control Techniques	SKCD200220
Pressure Transducers	0-500psi, 0.5-4.5VDC output	Brass body	Sensata Technologies	2CP5-71-47
Unit Body	Cabinet	Aluminum back, top, sides and removable covers	Liebert	304879G1
Unit Base	Base Structure	Galvanized carbon steel structure	Liebert	304890G1



Special Seismic Certification OSHPD Preapproval Liebert PR125A



Table 7. Nomenclature PR125A

Liebert PR125A EconoPhase Refrigerant Economizer

Product Model Number Nomenclature:

	Digit numbers:	1	2	3	4	5	6	7	8	9
	→	P	R	1	2	5	A	A	5	D
1-2: PR - Base model										
3-5: Nominal Cooling Capacity in kW										
6: A = Air cooled heat rejection										
7: Voltage Code: A = 460V 60Hz; B = 575V 60 Hz; C = 208V 60 Hz; D = 230 V 60 Hz; 2 = 380V 60 Hz										
8: Disconnect switch: 5 = 5,000 Amp; 6 = 6,000 Amp										
9: Pump Configuration: S = Single; D = Dual										