



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

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

OFFICE USE ONLY	
APPLICATION #:	OSP – 0363

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

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: DANFOSS DRIVES

Manufacturer's Technical Representative: Mahamed Tabrez

Mailing Address: 8800 W. Bradley Road, Milwaukee, WI. 53224

Telephone: (414) 355-8800 Email: ON FILE

**Product Information**

Product Name: PHD Panels

Product Type: Variable Frequency Drive panels OSP-0363

Product Model Number: See Attachment 1, Table 1.  
(List all unique product identification numbers and/or part numbers)

General Description: NEMA 1/12/3R rated carbon steel enclosures housing Danfoss VLT drives with additional tuned filter elements to mitigate harmonics.

Mounting Description: Rigid base mounted & rigid wall mounted. See attachments.

**Applicant Information**

Applicant Company Name: EASE

Contact Person: Jonathan Roberson, S.E.

Mailing Address: 5877 Pine Ave, Suite 210, Chino Hills, CA. 91709

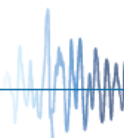
Telephone: (909) 606-7622 Email: [j.roberson@easeco.com](mailto:j.roberson@easeco.com)

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: October 1, 2019

Title: Principal Structural Engineer Company Name: EASE

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





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT  
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**California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)**

Company Name: EASE

Name: Jonathan Roberson, S.E. California License Number: S4197

Mailing Address: 5877 Pine Ave, Suite 210, Chino Hills, CA. 91709

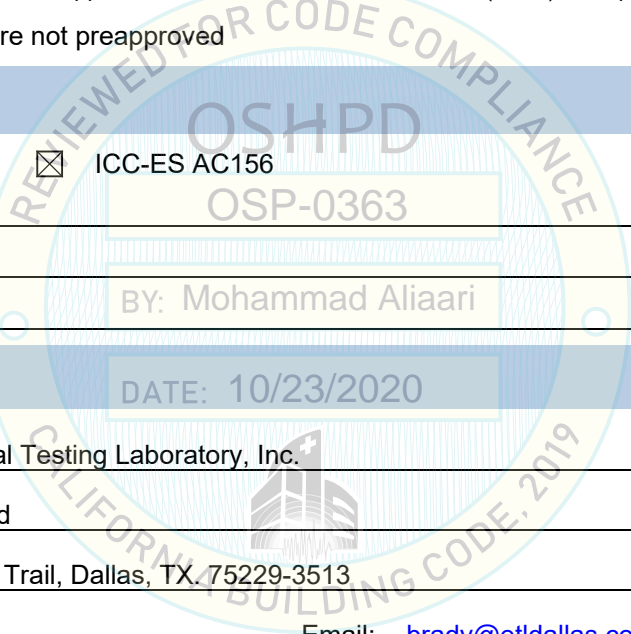
Telephone: (909) 606-7622 Email: [j.roberson@easeco.com](mailto:j.roberson@easeco.com)

**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:  ICC-ES AC156
- Other (Please Specify): \_\_\_\_\_



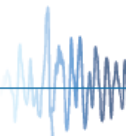
**Testing Laboratory**

Company Name: Environmental Testing Laboratory, Inc.

Contact Name: Brady Richard

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

Telephone: (972) 247-9657 Email: [brady@etldallas.com](mailto:brady@etldallas.com)





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**Seismic Parameters**

Design in accordance with ASCE 7-10 Chapter 13:  Yes  No

Design Basis of Equipment or Components ( $F_p/W_p$ ) = 1.88g

$S_{DS}$  (Design spectral response acceleration at short period, g) = 2.60

$a_p$  (In-structure equipment or component amplification factor) = 1

$R_p$  (Equipment or component response modification factor) = 2½

$\Omega_0$  (System overstrength factor) = 2

$I_p$  (Importance factor) = 1.5

$z/h$  (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See Attachment 2

Overall dimensions and weight (or range thereof) = See Attachment 1

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) = \_\_\_\_\_

$\Omega_0$  (System overstrength factor) = By: Mohammad Aliaari

$C_d$  (Deflection amplification factor) = \_\_\_\_\_

$I_p$  (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

Other(s) (Please Specify): Attachments 1 & 2

**OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025**

Signature: M. Aliaari

Date: October 23, 2020

Print Name: Mohammad Aliaari

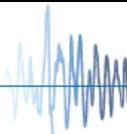
Title: Senior Structural Engineer

Special Seismic Certification Valid Up to :  $S_{DS}$  (g) = 2.60

$z/h$  = 1

Condition of Approval (if applicable): \_\_\_\_\_

\_\_\_\_\_



**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**

**TABLE 1: DANFOSS PHD PANELS**

Manufacturer	<b>DANFOSS DRIVES</b>								
Product Line	<b>PHD PANELS</b>								
Type Code	<b>PHD#02... [2]</b>								
PHD PANEL SIZE	DRIVE			APPROX. DIMENSIONS (IN.) [3]			MAX. WT. (LB.)	MOUNT	BASIS [1]
	HP	VAC	BYPASS	W	D	H			
Panel 1	25	480	3C	28.3	22.5	44.3	322	Wall	UUT-1
	1.5 – 25	480 / 600	N0, 3C	28.3	22.5	44.3	322	Wall	INT
Panel 2	1.5 – 25	480 / 600	3C, SS	38.3	23.5	55.3	390	Wall	INT
	25	480	SS	34.3	20.9	55.3	369	Wall	UUT-2
	30 – 75	480 / 600	N0, 3C	38.3	23.5	55.3	598	Wall	INT
Panel 3	75	480	3C	38.3	23.5	55.3	598	Wall	UUT-3
	75	480	SS	42.0	23.0	75.1	862	Floor	UUT-4
	30 – 75	480 / 600	SS	43.8	25.5	75.1	862	Floor	INT
Panel 4	100 – 125	480 / 600	N0	957			957	Floor	INT
	100 – 125	480 / 600	3C, SS	51.8	25.5	87.1	1256	Floor	INT
Panel 5	150 – 250	480	N0	45.8	38.4	79.1	1647	Floor	INT
	150 – 200	600							
Panel 6	150 – 250	480	3C, SS	64.8	38.4	87.1	1980	Floor	INT
	150 – 200	600							
Panel 7	300 – 450	480	N0	54.6	44.4	93.1	2361	Floor	INT
	250 – 400	600							
Panel 8	300 – 450	480	N0	51.0	33.0	97.1	2351	Floor	INT
	250 – 400	600							
Panel 9	300 – 450	480	3C, SS	91.6	44.4	93.1	3169	Floor	INT
	250 – 400	600							
Panel 10	500 – 600	480	N0	81.6	44.7	97.1	3412	Floor	INT
	450 – 650	600							
Panel 11	500 – 600	480	3C, SS	118.8	44.7	97.1	4225	Floor	INT
	450 – 650	600							
		600	480	3C	118.8	44.7	97.1	4225	Floor
Enclosure	11 ga. (floor mounted) / 14 ga. (wall mounted) carbon steel. NEMA/UL rated 1 / 12 / 3R.								
Mounting	RIGID BASE (FLOOR) MOUNTED: a free-standing, base mounted condition with the component rigidly attached to a supporting structure and no lateral support above the base. RIGID WALL MOUNTED: component is fully supported vertically and laterally by a building wall or partition.								
Notes	<ol style="list-style-type: none"> <li>BASIS: <ul style="list-style-type: none"> <li>UUT#: Indicates that a test specimen matching these characteristics was tested.</li> <li>INT (Interpolate or Extrapolate): indicates a model that was not specifically tested, and by which seismic qualification was established through evaluation of testing of other, similar models in the product line.</li> </ul> </li> <li>Type Code defines the configuration of the Phd Panel. Each alphanumeric character defines a configurable option in the panel. For a complete listing of the Type Code characters recognized and accepted by this report, see Figure 1.</li> <li>Dimensions listed for untested panels are for NEMA 3R enclosures. In most cases the dimensions of NEMA 1/12 enclosures will be smaller. The difference is the extent of the rain hood found on NEMA 3R versions.</li> </ol>								

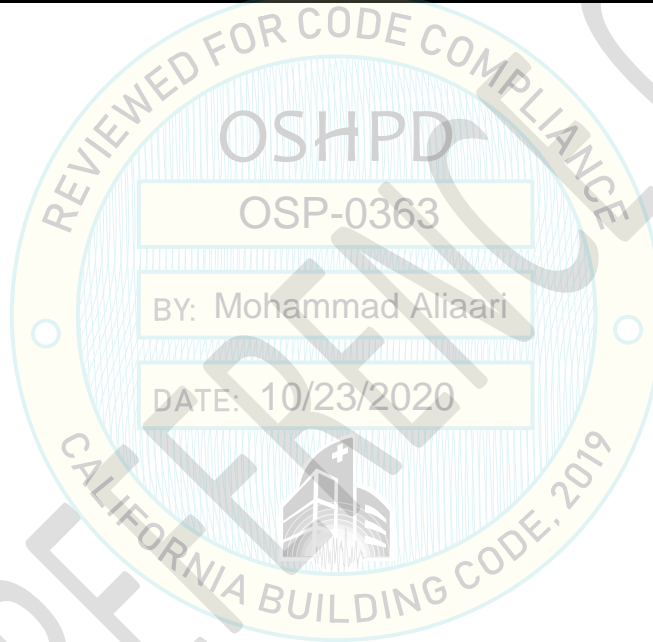


**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**

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**FIGURE1: CERTIFIED DRIVE TYPE CODES** (continued)

Character	Parameter	Allowed Value	Description
26	A Options	J	BACNet (109)
		L	Profinet SRT (120)
		N	Ethernet IP (121)
		Q	Modbus
27	B Options	X	No B Option
		0	Analog I/O (109)
		2	Thermistor Card (112)
		4	Sensor Input (114)
		K	General Purpose I/O (101)
		P	Relay Card (105)
28	C Options	Y	Extended Cascade Control
		X	No C Option
		5	Cascade Control
29	D Options	X	No Option
		0	24VDC Backup
30-31	Reserved for Future Use	XX	None (Reserved for Future Use)





**ATTACHMENT 2: TEST SPECIMEN SUMMARY**

**TABLE 2: SHAKE TABLE TEST PARAMETERS**

BUILDING CODE	TEST CRITERIA	Sds	z/h	Ip	AFLX-H	ARIG-H	AFLX-V	ARIG-V
CBC 2019	ICC-ES AC156	2.6	1.0	1.5	4.16	3.12	1.74	0.70

All test specimens below maintained structural integrity and functionality at the conclusion of all testing.

**UUT-1: 25HP 3C BYPASS**

<i>Description:</i>	<b>Standard Components</b> 25 HP AQUA Drive 480 V 3-Phase NEMA 3R Enclosure 3 Contactor Bypass Main Fused Disconnect Class A2 Input RFI Filter Brake Chopper Option Card A (Profinet SRT) Option Card B (Analog I/O (109))	Option Card C(Cascade Control) 24V DC Backup <b>Additional Components</b> XT Circuit Breaker dv/dt Filter Additional 1.5HP HVAC (for add'l option cards) Class A1 Input RFI Filter Comm. Card A (LonWorks) Option Card B (Relay Card)
<i>Mounting:</i>	Rigid Wall mounted using (6) – 3/8" dia. Grade 8 bolts	
<i>Dimensions:</i>	W (in.)    D (in.)    H (in.)	
	28.3        22.5        44.3	
<i>Weight:</i>	322 lbs.	
<i>Resonance</i>	X-Axis    Y-Axis    Z-Axis	
<i>Frequencies:</i>	---        ---        ---	
<i>Typecode</i>	PHD202025T4E3R3CMXNX2CBL050	P/N: 177X0194



**UUT-2: 25HP SS BYPASS**

<i>Description:</i>	<b>Standard Components</b> 25 HP HVAC Drive 480 V 3-Phase NEMA 1 Enclosure Soft Start Bypass Main Fused Disconnect	Class A2 Input RFI Filter Brake Chopper Option Card A (Modbus TCP) Option Card B (Gen Purpose I/O) 24V DC Backup
<i>Mounting:</i>	Rigid Wall mounted using (8) – 3/8" dia. Grade 8 bolts	
<i>Dimensions:</i>	W (in.)    D (in.)    H (in.)	
	34.3        20.9        55.3	
<i>Weight:</i>	369 lbs.	
<i>Resonance</i>	X-Axis    Y-Axis    Z-Axis	
<i>Frequencies:</i>	---        ---        ---	
<i>Typecode</i>	PHD102025T4E01SSMXNX2CBQKX0	P/N: 177X0881



**UUT-3: 75HP 3C BYPASS**

<i>Description:</i>	<b>Standard Components</b> 75 HP AQUA Drive 480 V 3-Phase NEMA 3R Enclosure 3 Contactor Bypass Main Circuit Breaker Class A1 Input RFI Filter Brake Chopper	Option Card A (Profibus DPV1) Option Card B Relay Card) Option Card C (Cascade Control) 24V DC Backup <b>Additional Components</b> dv/dt Filter XT Circuit Breaker
<i>Mounting:</i>	Rigid Wall mounted using (8) – 3/8" dia. Grade 8 bolts	
<i>Dimensions:</i>	W (in.)    D (in.)    H (in.)	
	38.3        23.5        55.3	
<i>Weight:</i>	598 lbs.	
<i>Resonance</i>	X-Axis    Y-Axis    Z-Axis	
<i>Frequencies:</i>	---        ---        ---	
<i>Typecode</i>	PHD202075T4E3R3CCXNX1CB0P50	P/N: 177X0195



**ATTACHMENT 2: TEST SPECIMEN SUMMARY**

**UUT-4: 75HP SS BYPASS**

*Description:* **Standard Components**

75 HP AQUA Drive  
480 V 3-Phase  
NEMA 12 Enclosure  
Soft Starter Bypass  
Main Circuit Breaker  
dv/dt Filter  
Class A1 Input RFI Filter  
Brake Chopper  
Option Card A (Profibus DPV1)  
Option Card B (Gen Purpose I/O)  
Option Card C (Cascade Control)  
24V DC Backup

**Additional Components**

XT Circuit Breaker  
75HP Contactor for 3C Bypass  
75HP Overload for 3C Bypass  
Additional 3HP AQUA (for add'l card options)  
Class A2 Input RFI Filter  
Option Card A (Device net)  
Option Card B (Sensor Input)

*Mounting:* Rigid base mount w/ (6) – 5/8" dia. bolts + (2) – 1/2" dia. Bolts

*Dimensions:* W (in.)    D (in.)    H (in.)  
42            23            75.1

*Weight:* 862 lbs.

*Resonance* X-Axis    Y-Axis    Z-Axis  
*Frequencies:* 11.9    16.0    29.9

*Typecode* PHD202075T4E12SSCDNX1CBQP50    P/N: 177X0200



**UUT-5: 600HP SS BYPASS**

*Description:* **Standard Components**

600 HP HVAC Drive  
480 V 3-Phase  
NEMA 3R Enclosure  
Softstart Bypass  
Circuit Breaker  
dv/dt Output Filter  
Brake Chopper  
24V DC Backup  
Option Card A (BACNet)  
Option Card B (Gen. Purpose I/O)  
Class A2 Input RFI Filter

**Additional Components**

650HP Overload for 3C Bypass  
Additional 1.5 Aqua Drive  
(for additional option cards)  
Class A1 Input RFI Filter  
Option Card A (Ethernet)  
Option Card B (Relay)  
Option Card C (Cascade Control)

*Mounting:* Rigid base mount w/ (15) – 5/8" dia. bolts

*Dimensions:* W (in.)    D (in.)    H (in.)  
118.8        44.7        97.1

*Weight:* 4225 lbs.

*Resonance* X-Axis    Y-Axis    Z-Axis  
*Frequencies:* 5.8        7.5        11.3

*Typecode* PHD102600T4E3RSSCDNX2CBJKX0    P/N: 177X0880

