



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

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

OFFICE USE ONLY	
APPLICATION #:	OSP – 0333

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

Type:  New  Renewal

**Manufacturer Information**

Manufacturer: TRANE

Manufacturer's Technical Representative: Tom Troyanek

Mailing Address: 3600 Pammel Creek Road, La Crosse, WI 54601

Telephone: (608) 787-3447 Email: [ttroyanek@trane.com](mailto:ttroyanek@trane.com)

**Product Information**

Product Name: TR200 Drives & Panels

Product Type: Variable Frequency Drives

Product Model Number: D1h, D2h, D5h, D6h, D7h & D8h frame sizes. See attachments for additional information.  
(List all unique product identification numbers and/or part numbers)

General Description: Variable frequency drives for the control of induction motors.

Mounting Description: Rigid base mounted, rigid wall mounted and rigid wall/floor 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

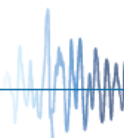
Telephone: (909) 606-7622 Email: [j.roberson@easeco.com](mailto:j.roberson@easeco.com)

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  
FACILITIES DEVELOPMENT DIVISION**

**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): \_\_\_\_\_

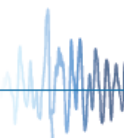
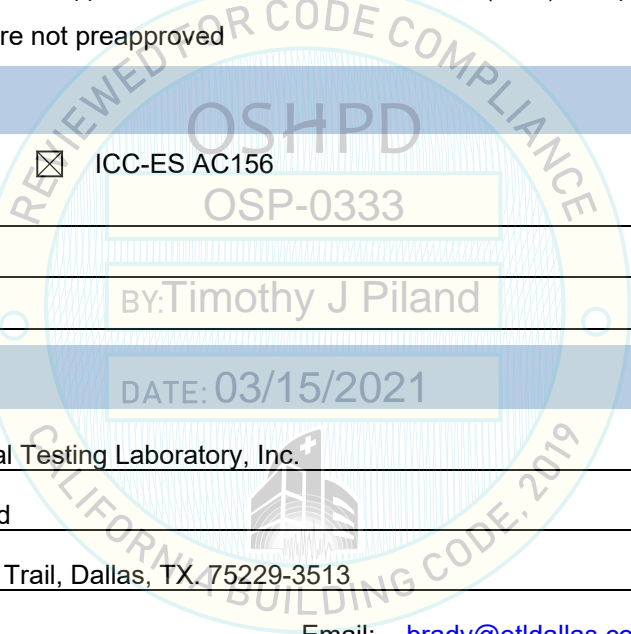
**Testing Laboratory**

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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FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

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

Design Basis of Equipment or Components (Fp/Wp) = 1.95g

Sds (Design spectral response acceleration at short period, g) = 2.60

ap (In-structure equipment or component amplification factor) = 2 1/2

Rp (Equipment or component response modification factor) = 6

Omega\_0 (System overstrength factor) = 2

Ip (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 [X] No

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

Sds (Design spectral response acceleration at short period, g) =

Sd1 (Design spectral response acceleration at 1 second period, g) =

R (Response modification coefficient) =

Omega\_0 (System overstrength factor) =

Cd (Deflection amplification factor) =

Ip (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 [X] No

List of Attachments Supporting Special Seismic Certification

[X] Test Report(s) [ ] Drawings [ ] Calculations [ ] Manufacturer's Catalog

[X] Other(s) (Please Specify): Attachments 1 & 2

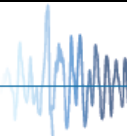
OSHPD Approval (For Office Use Only) - Approval Expires on December 31, 2025

Signature: [Signature] Date: March 15, 2021

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: Sds (g) = 2.60 z/h = 1

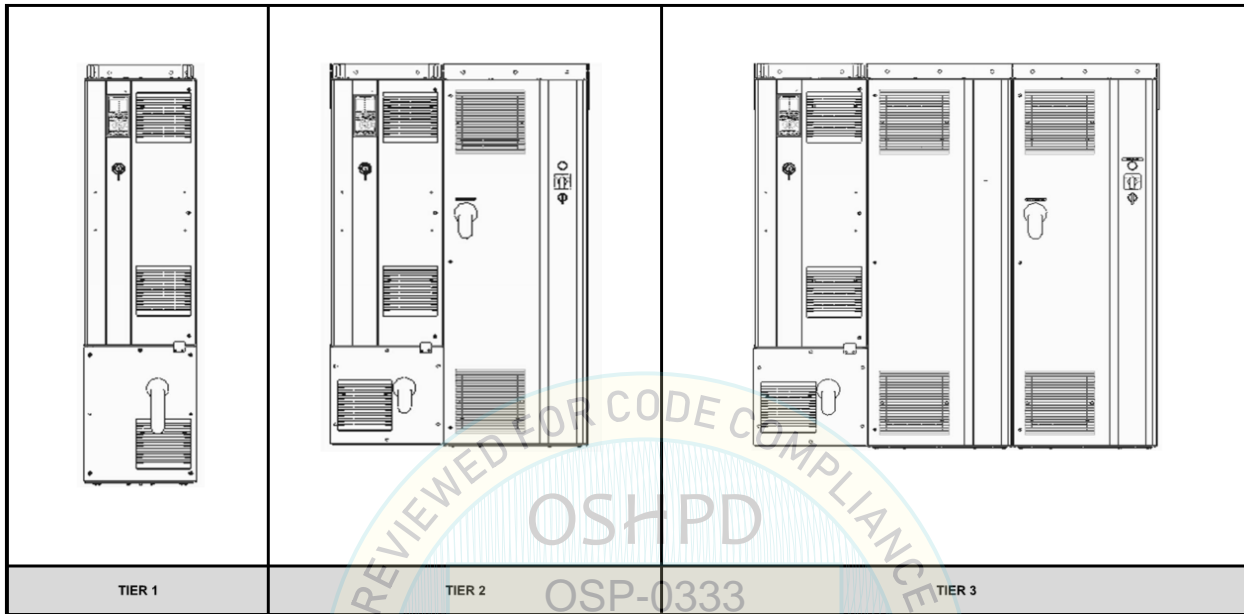
Condition of Approval (if applicable):



**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**

**TABLE 1: TRANE TR200 DRIVE & CLASSIC PANEL CHARACTERISTICS**

Product Line	REVISED D-FRAME DRIVE MODEL TRANE TR200 Drives			BASE DRIVE MODEL TR-200			CLASSIC PANEL T200		
FRAME SIZE	DRIVE <sup>[1]</sup> HP RANGE	DRIVE / PANEL <sup>[2]</sup>	TYPE CODE <sup>[3]</sup>	MAX. DIMENSIONS (IN.)			MAX WT (LBS.)	MOUNT	BASIS <sup>[4]</sup>
				WIDTH	DEPTH	HEIGHT			
D1h	75 – 250	Drive	TR-200*	12.8	14.9	35.5	165	Wall	UUT-1
		Tier 2	T200*	29.7	16.4	47.6	420	Wall	INT
		Tier 3	T200*	46.3	16.4	47.6	585	Wall	INT
D2h	250 – 450	Drive	TR-200*	16.5	14.9	43.6	283	Wall	INT
		Tier 2	T200*	33.5	16.4	62.6	630	Wall	INT
		Tier 3	T200*	50.1	16.4	62.6	1070	Wall	UUT-3
D5h	75 – 250	Drive / Tier 1	TR-200*	12.8	15.0	52.1	219	Wall	INT
D6h	250 – 450	Drive / Tier 1	TR-200*	12.8	15.0	65.6	290	Wall	UUT-2
<b>DRIVES WITH PEDESTAL BASE</b>									
D1h	75 – 250	Drive / Tier 1	TR-200*	12.8	14.9	51.2	176	Floor	UUT-4
								Wall/Floor	UUT-5
D2h	250 – 450	Drive / Tier 1	TR-200*	16.5	14.9	59.3	300	Wall/Floor	INT
D5h	75 – 250	Drive / Tier 1	TR-200*	12.8	15.0	60.0	255	Wall/Floor	INT
D6h	250 – 450	Drive / Tier 1	TR-200*	12.8	15.0	73.4	301	Wall/Floor	INT
D7h	75 – 250	Drive / Tier 1	TR-200*	16.5	15.1	77.9	407	Wall/Floor	INT
D8h	250 – 450	Drive / Tier 1	TR-200*	16.5	15.8	89.9	540	Wall/Floor	UUT-6
Enclosure	IP 21 / UL Type 1 / NEMA Type 1 IP 54 / UL Type 12 / NEMA Type 12 Carbon steel back panel with extruded aluminum sides and front cover.								
Mounting	<p><u>Floor (Rigid Base)</u>: a free-standing, base mounted condition with the component rigidly attached to a supporting structure and no lateral support above the base.</p> <p><u>Wall/Floor</u>: component is rigidly attached to a supporting structure at its base, with additional lateral restraint at the top anchoring the component to an adjacent wall or other supporting structure.</p> <p><u>Wall</u>: fully supported by a building wall structure.</p>								
Certified Sub-Assemblies	<ul style="list-style-type: none"> <li>Control Transformers: GE 575,460 Primary 120V Secondary</li> <li>Drive Fuses: Bussmann 315-800 Amps</li> <li>Main fuses: Bussmann 200-600 Amps</li> <li>Circuit Breakers: See Table 2</li> <li>Electronically Controlled Bypass (ECB) or</li> <li>Electro-Mechanical Bypass (EMB or 3MB for NEMA/UL Type 3R ) with or w/o: Common Run/Stop for Drive and Bypass, Bypass Undervoltage protection, Automatic Bypass, Run Permissive in Bypass, and/or Firemode via Bypass</li> <li>None, 2 or 3 contactor Bypass circuit</li> <li>Main Disconnect Switch, Drive Disconnect Switch and/or Main Circuit Breaker</li> <li>Brake IGBT</li> <li>Safe Stop</li> <li>RFI filter Class A1 &amp; A2</li> <li>A, B, C, D option cards</li> </ul>								
Notes	<ol style="list-style-type: none"> <li>Includes voltages of 380-690VAC 3 phase</li> <li>See Figure 1: Classic Panel Tier Visual Identification</li> <li>Identification: Type Codes (T/C) are alphanumeric sequences which uniquely identifies the configuration of the unit. In the Table above, "*" indicates a variable defined as follows: <ul style="list-style-type: none"> <li>Certified drive Type Codes are listed in Figure 2.</li> <li>Certified panel Type Codes are listed in Figure 3.</li> </ul> </li> <li>Basis: <ul style="list-style-type: none"> <li>UUT#: Indicates that a test specimen matching these characteristics was tested.</li> <li>INT (Interpolate): 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> </ol>								



**FIGURE 1: CLASSIC PANEL TIER VISUAL IDENTIFICATION**

BY: Timothy J Piland

DATE: 03/15/2021

**TABLE 2: TRANE TR200 DRIVE CIRCUIT BREAKERS**

Drive Manufacturer P/N	Amp Rating
34057800	250
34057900	400
34058000	600
34059900	800
177G5088	320
177G5089	400
177G5090	480
177G5091	600
177G5092	800

**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**

**FIGURE 2: CERTIFIED DRIVE TYPE CODES**

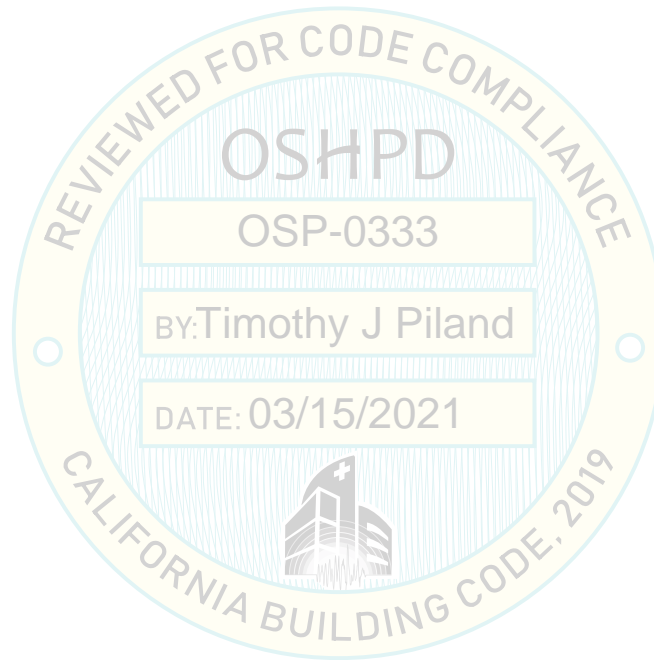
T	R	-	2	0	0																																	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Character	Parameter	Allowed Value	Description
1-6	Product Group	TR-200	Trane HVAC Drive
7-10	Power Size	N55K	55 kW / 75 HP
		N75K	75 kW / 100 HP
		N90K	90 kW / 125 HP
		N110	110 kW / 150 HP
		N132	132 kW / 200 HP
		N160	160 kW / 250 HP
		N200	200 kW / 300 HP
		N250	250 kW / 350 HP
11-12	AC Line Voltage	T4	Three phase 380-480 VAC
		T5	Three phase 380-500 VAC
		T7	Three phase 525-690 VAC
13-15	Enclosure	E21	IP 21 / Type 1
		E2D	IP 21 / Type 1 – D1h frame
		E54	IP 54 /Type 12
		E5D	IP 54 /Type 12 – D1h frame
		E2M	IP 21 / Type 1 with mains shield
		E5M	IP 54 /Type 12 with mains shield
		H21	IP 21 / Type 1 with heater
		H54	IP 54 / Type 12 with heater
16-17	RFI filter	H2	RFI Class A2
		H4	RFI class A1
18	Breaking & Safety	X	No brake IGBT
		B	Brake IGBT
		T	Safe Stop
		R	Regeneration terminals
		U	Brake IGBT plus Safe Stop
		X	Blank faceplate, no LCP installed
19	LCP Display	N	Numerical Local Control Panel (LCP-101)
		G	Graphical Local Control Panel (LCP-102)
20	PCB Coating	C	Coated PCB
		R	Coated PCB + ruggedised
21	Mains Input	X	No mains option
		7	Fuses
		3	Mains disconnect + fuse
		4	Mains contactor + fuse
		E	Mains disconnect + contactor + fuse
		J	Circuit breaker + fuse
22	Hardware A	X	Standard cable entries
23	Hardware B	X	No adaptation
		Q	Heat-sink access panel
24-27	Special Version	SXXX	No Option
28	LCP Language	X	Standard language package
29-30	Fieldbus	AX	No option
		A0	PROFIBUS DP V1 MCA 101
		A4	DeviceNet MCA 104
		AE	BACNet MCA 116
		AF	LonWorks MCA 115
		AG	LonWorks MCA 108
		AJ	BACNet MCA 109
		AL	PROFINET MCA 120
		AN	EtherNet/IP MCA 121
		AQ	Modbus TCP MCA 122
AV	DeviceNet Converter MCA 194		

**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**

ATTACHMENT PAGE | 4 OF 6

Character	Parameter	Allowed Value	Description
31-32	Application	BX	No application option
		B0	Analog I/O Option MCB 109
		B2	PTC Thermistor Card MCB 112
		B4	Sensor Input Card MCB 114
		B5	Programmable I/O Option Module MCB 115
		BK	General Purpose MCB 101
		BP	MCB 105 Relay Expansion
		BW	Real Time Clock MCB 116
33-34	Motion Control	CX	No motion control option
35	Extended Relay	X	No selection
36-37	Motion Software	XX	No software option
38-39	Control Power Backup Input	DX	No DC input installed
		D0	24 V DC Supply Option MCB 107



**FIGURE 3: CERTIFIED PANEL TYPE CODES**

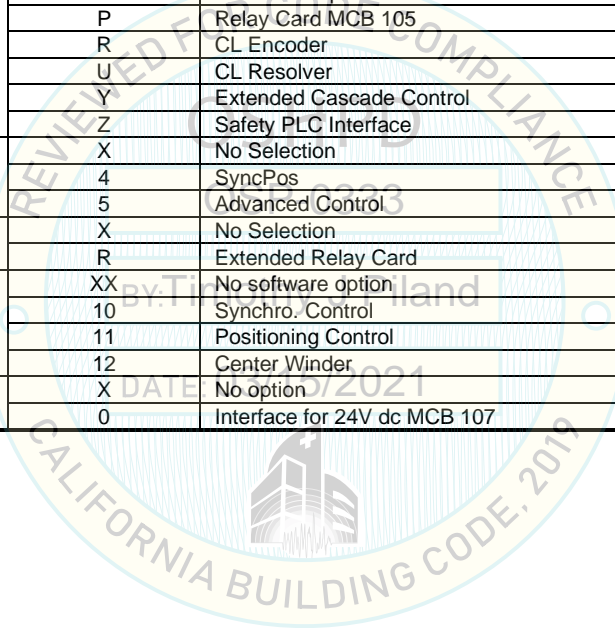
T	2	0	0																																				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

Character	Parameter	Allowed Value	Description
1	Prefix	T	Trane
2-4	Series	200	Trane
5-7	Power Size	150	150 HP
		200	200 HP
		250	250 HP
		300	300 HP
		350	350 HP
8-9	Voltage	400	400 HP
		T4	460 Volts
8-9	Voltage	T6	600 Volts
		E01	Nema 1
10-12	Enclosure Type	E12	Nema 12
		NO	No Bypass
13-14	Bypass Circuit	2C	2 Contactor Bypass
		3C	3 Contactor Bypass
		D	Drive Disconnect Switch
15	Switches	M	Main Disconnect Switch
		C	Main Circuit Breaker
		N	Main & Drive Disconnect Switches
		F	Main Circuit Breaker & Drive Disconnect Switch
		X	None
16	Power Fusing	D	Drive Fusing
		M	Main & Drive Fusing
		N	100 kAIC Label
17	Control Selection A	X	None
		1	ECB Package
		2	EMB 2 Package
		3	EMB 1 Package
		4	EMB Package
18	Reactors	X	None
		3	3% Input Line Reactor
		D	Output Filter dV/dt Filter
		E	Both Reactor & Filter
19	Power Rating Style	X	P Style Power Rating
		N	N Style Power Rating
20	Motor Quantity	S	Single Motor
		C	Contactor Motor Select
21	Motor 1	T	150 HP
		U	200 HP
		V	250 HP
		W	300 HP
22	Motor 2	T	150 HP
		U	200 HP
		V	250 HP
		W	300 HP
23	Future Option	Z	No Future Option
24	RFI Filter	X	Std. RFI
		4	Class A1
25	Brake & Stop	X	No Brake Chopper
		B	Brake Chopper
		T	Safe Stop
		U	Brake Chopper & Safe Stop
26	Display	X	Blank cover
		N	Numerical
		G	Graphical
27	Coating	C	Conformal
28	Adaptation A	X	No Adaptation
29	Adaptation B	X	No Adaptation
30-32	Software	XXX	Latest Release
33	Software Language	X	Standard Language Package



**ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS**

Character	Parameter	Allowed Value	Description
34	Options A	X	No Option
		4	DeviceNet MCA 104
		J	BACNet MCA 109
		Q	Modbus TCP
		G	Lon Works MCA 108
		L	Profinet MCA 120
		N	Ethernet/IP MCA 121
		0	Profibus DP V1
		Q	Modbus MCA 122
		T	3000 Converter (FC302only)
		U	5000 Converter (FC302only)
		6	CanOpen (FC302 only)
		8	EtherCAT (FC302 only)
35	Options B	X	No Option
		0	Analog I/O MCB 109
		2	PTC Thermistor Card
		4	Sensor Input Card
		K	General Purpose I/O MCB 101
		P	Relay Card MCB 105
		R	CL Encoder
		U	CL Resolver
		Y	Extended Cascade Control
Z	Safety PLC Interface		
36	Options C1	X	No Selection
		4	SyncPos
37	Options C2	5	Advanced Control
		X	No Selection
38-39	Options C3	R	Extended Relay Card
		XX	No software option
		10	Synchro. Control
		11	Positioning Control
40	Options D	12	Center Winder
		X	No option
		0	Interface for 24V dc MCB 107



**ATTACHMENT 2: TEST SPECIMEN SUMMARY**

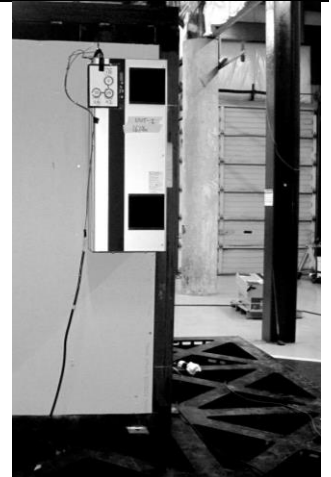
**TABLE 1: SHAKE TABLE TEST PARAMETERS**

BUILDING CODE	TEST CRITERIA	S <sub>ds</sub>	z/h	I <sub>p</sub>	A <sub>FLX-H</sub>	A <sub>RIG-H</sub>	A <sub>FLX-V</sub>	A <sub>RIG-V</sub>
IBC 2015 / CBC 2016	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: D1h FRAME DRIVE**

<i>Description:</i>	132 kW / 200 HP Three-phase 380-600 VAC IP 21 /Type 1 enclosure RFI Class A1 No Brake IGBT Graphical Local Control Panel	Coated PCB Fuses Standard Cable Entries Option Card : -MCA 121 Ethernet IP -MCB 101 General Purpose I/O -MCO 351 Positioning control
<i>Mounting:</i>	Wall mounted w/ (4) - 1/4" self-tapping screws w/ 1 - 1/4" OD fender washers	
<i>Dimensions:</i>	W (in.)      D (in.)      H (in.)	
	12.8          14.5          33.2	
<i>Weight:</i>	161 lbs.	
<i>Resonance</i>	X-Axis      Y-Axis      Z-Axis	
<i>Frequencies:</i>	---          ---          ---	
<i>Identification</i>	P/N: 134H0949	



**UUT-2: D6h FRAME DRIVE**

<i>Description:</i>	132 kW / 200 HP Three-phase 525-690 VAC IP 54 /Type 12 enclosure RFI Class A2 Brake IGBT Graphical Local Control Panel Heater	Coated PCB Mains Disconnect, contactor and fuse Standard Cable Entries Option Card : -MCA 121 Ethernet IP -MCB 101 General Purpose I/O -MCO 351 Positioning control
<i>Mounting:</i>	Wall mounted w/ (4) - 1/4" self-tapping screws w/ 1 - 1/4" OD fender washers	
<i>Dimensions:</i>	W (in.)      D (in.)      H (in.)	
	12.8          14.625      63.6	
<i>Weight:</i>	286.5 lbs.	
<i>Resonance</i>	X-Axis      Y-Axis      Z-Axis	
<i>Frequencies:</i>	---          ---          ---	
<i>Identification:</i>	P/N:134H0931	



**UUT-3: D2h FRAME TIER 3 PANEL**

<i>Description:</i>	250 kW / 350 HP Three-phase 380-480 VAC IP 54 /Type 12 enclosure (Drive) Type 1 enclosure (Panel) RFI Class A2 No Brake IGBT Graphical Local Control Panel Line Reactor Output dV/dt Filter	Coated PCB Fuses Standard Cable Entries 2 Contactor Bypass Main Circuit Breaker Drive Disconnect Switch Drive Fusing EMB 2 Package Standard RFI
<i>Mounting:</i>	Wall mounted using (16) - 1/4" self-tapping screws w/ 1 - 1/4" OD Fender washers	
<i>Dimensions:</i>	W (in.)      D (in.)      H (in.)	
	49.7          14.6          61.125	
<i>Weight:</i>	1070 lbs.	
<i>Resonance</i>	X-Axis      Y-Axis      Z-Axis	
<i>Frequencies:</i>	---          ---          ---	
<i>Identification:</i>	P/N: 131Z8887	



**ATTACHMENT 2: TEST SPECIMEN SUMMARY**

**UUT-4: D1h FRAME DRIVE**

<i>Description:</i>	132 kW / 200 HP Three-phase 525-690 VAC IP 21 /Type 1 enclosure RFI Class A2 No Brake IGBT Graphical Local Control Panel Pedestal base	Coated PCB Fuses Standard Cable Entries Option Card : -MCA 121 Ethernet IP -MCB 101 General Purpose I/O -MCO 351 Positioning control
<i>Mounting:</i>	Rigid Base (Floor) Mounted using (4) ½" Grade 5 Allen Head Cap Screws w/ washers	
<i>Dimensions:</i>	W (in.)      D (in.)      H (in.)	
	12.8            14.5            48.9	
<i>Weight:</i>	142 lbs.	
<i>Resonance</i>	X-Axis            Y-Axis            Z-Axis	
<i>Frequencies:</i>	15.6            15.4            12. 8	
<i>Identification:</i>	P/N:134H0952	



**UUT-5: D1h FRAME DRIVE**

<i>Description:</i>	132 kW / 200 HP Three-phase 525-690 VAC IP 54 /Type 12 enclosure RFI Class A2 Brake IGBT Graphical Local Control Pane Pedestal Base	Coated PCB Fuses Standard Cable Entries Option Card : -MCA 121 Ethernet IP -MCB 101 General Purpose I/O -MCO 351 Positioning control
<i>Mounting:</i>	Wall/Floor mounted using (4) - 3/8 " Bolts to the floor and (4) - ¼" self-tapping screws at top anchor point.	
<i>Dimensions:</i>	W (in.)      D (in.)      H (in.)	
	12.75            14.5            48.875	
<i>Weight:</i>	142 lbs.	
<i>Resonance</i>	X-Axis            Y-Axis            Z-Axis	
<i>Frequencies:</i>	---            ---            ---	
<i>Identification:</i>	P/N:134H0950	



**UUT-6: D8h FRAME DRIVE**

<i>Description:</i>	250 kW / 350 HP Three-phase 380-500 VAC IP 54 /Type 12 enclosure RFI Class A1 Brake IGBT Graphical Local Control Panel Heater	Coated PCB Mains Disconnect, contactor and fuse Standard Cable Entries Option Card : -MCA 121 Ethernet IP -MCB 101 General Purpose I/O -MCO 351 Positioning control
<i>Mounting:</i>	Wall/Floor mounted using (4) - 3/8" gr 8 bolts to floor plate and (2) - ¼" self-tapping screws at top anchor point.	
<i>Dimensions:</i>	W (in.)      D (in.)      H (in.)	
	16.6            14.625            80.25	
<i>Weight:</i>	540 lbs.	
<i>Resonance</i>	X-Axis            Y-Axis            Z-Axis	
<i>Frequencies:</i>	---            ---            ---	
<i>Identification:</i>	P/N: 134H0930	

