



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

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

OFFICE USE ONLY

APPLICATION #: **OSP – 0316 – 10**

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: **DANFOSS**

Manufacturer's Technical Representative: Jeffrey Zintl

Mailing Address: 4401 N. Bell School Road, Loves Park, IL 61111

Telephone: (815) 639-7622 Email: On File

Product Information

Product Name: Revised D-Frame Drives

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 Co.**

Contact Person: JONATHAN ROBERSON, S.E.

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

Telephone: (406) 541-EASE (3273) Email: J.Roberson@EASECo.com

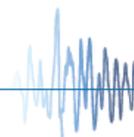
I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

Signature of Applicant:  Date: 1/31/13

Title: Principal Engineer Company Name: EASE Co.

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

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY
OSH-FD-759 (REV 1/24/13)



osHPD

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

Company Name: EASE Co.

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

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





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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) = 1.95g

S_{DS} (Design spectral response acceleration at short period, g) = 2.6

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

R_p (Equipment or component response modification factor) = 6

Ω_0 (System overstrength factor) = 2 1/2

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) = _____

Ω_0 (System overstrength factor) = _____

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, 2010: 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, 2019

Signature: _____ Date: July 12, 2013

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 2.6 z/h = 1.0

Condition of Approval (if applicable): _____



ATTACHMENT 1: SEISMIC CERTIFIED COMPONENTS

TABLE 1: DANFOSS VLT DRIVE & TRADITIONAL (P650) PANEL CHARACTERISTICS

<i>Manufacturer</i>	DANFOSS DRIVES								
<i>Product Line</i>	REVISED D-FRAME DRIVE MODEL ^[5] Danfoss VLT FC100 HVAC Drives Danfoss VLT FC200 AQUA Drives Danfoss VLT FC300 INDUSTRIAL Drives			BASE DRIVE MODEL FC102 FC202 FC302 / 322			TRADITIONAL (P650) PANEL S102 S202 S302 / S322		
FRAME SIZE	DRIVE ^[1] HP RANGE	DRIVE / PANEL ^[2]	TYPE CODE ^[3]	MAX. DIMENSIONS (IN.)			MAX WT (LBS.)	MOUNT	BASIS ^[4]
				WIDTH	DEPTH	HEIGHT			
D1h	75 – 250	Drive	FC*	12.8	14.9	35.5	165	Wall	UUT-1
		Tier 2	S*	29.7	16.4	47.6	420	Wall	INT
		Tier 3	S*	46.3	16.4	47.6	585	Wall	INT
D2h	250 – 450	Drive	FC*	16.5	14.9	43.6	283	Wall	INT
		Tier 2	S*	33.5	16.4	62.6	630	Wall	INT
		Tier 3	S*	50.1	16.4	62.6	1070	Wall	UUT-3
D5h	75 – 250	Drive / Tier 1	FC*	12.8	15.0	52.1	219	Wall	INT
D6h	250 – 450	Drive / Tier 1	FC*	12.8	15.0	65.6	290	Wall	UUT-2
DRIVES WITH PEDESTAL BASE									
D1h	75 – 250	Drive / Tier 1	FC* FC*	12.8	14.9	51.2	176	Floor	UUT-4
								Wall/Floor	UUT-5
D2h	250 – 450	Drive / Tier 1	FC*	16.5	14.9	59.3	300	Wall/Floor	INT
D5h	75 – 250	Drive / Tier 1	FC*	12.8	15.0	60.0	255	Wall/Floor	INT
D6h	250 – 450	Drive / Tier 1	FC*	12.8	15.0	73.4	301	Wall/Floor	INT
D7h	75 – 250	Drive / Tier 1	FC*	16.5	15.1	77.9	407	Wall/Floor	INT
D8h	250 – 450	Drive / Tier 1	FC*	16.5	15.8	89.9	540	Wall/Floor	UUT-6
<i>Certified Enclosure</i>	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.								
<i>Certified Mounting</i>	<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. <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. <u>Wall</u> : fully supported by a building wall structure.								
<i>Certified Sub-Assemblies</i>	<ul style="list-style-type: none"> Control Transformers: GE 575,460 Primary 120V Secondary Drive Fuses: Bussman 315-800 Amps Main fuses: Bussmann 200-600 Amps Circuit Breakers: See Table 2 Electronically Controlled Bypass (ECB) or 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 None, 2 or 3 contactor Bypass circuit Main Disconnect Switch , Drive Disconnect Switch and/or Main Circuit Breaker Brake IGBT Safe Stop RFI filter Class A1 & A2 A, B, C, D option cards 								
<i>Notes</i>	<ol style="list-style-type: none"> Includes voltages of 380-690VAC 3 phase See Figure 1: Traditional Panel (P650) Tier Visual Identification 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"> Certified drive Type Codes are listed in Figure 2. Certified panel Type Codes are listed in Figure 3. Basis: <ul style="list-style-type: none"> UUT#: Indicates that a test specimen matching these characteristics was tested. 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. Differences in function between each product series are accomplished through software/programming specific to each series. 								

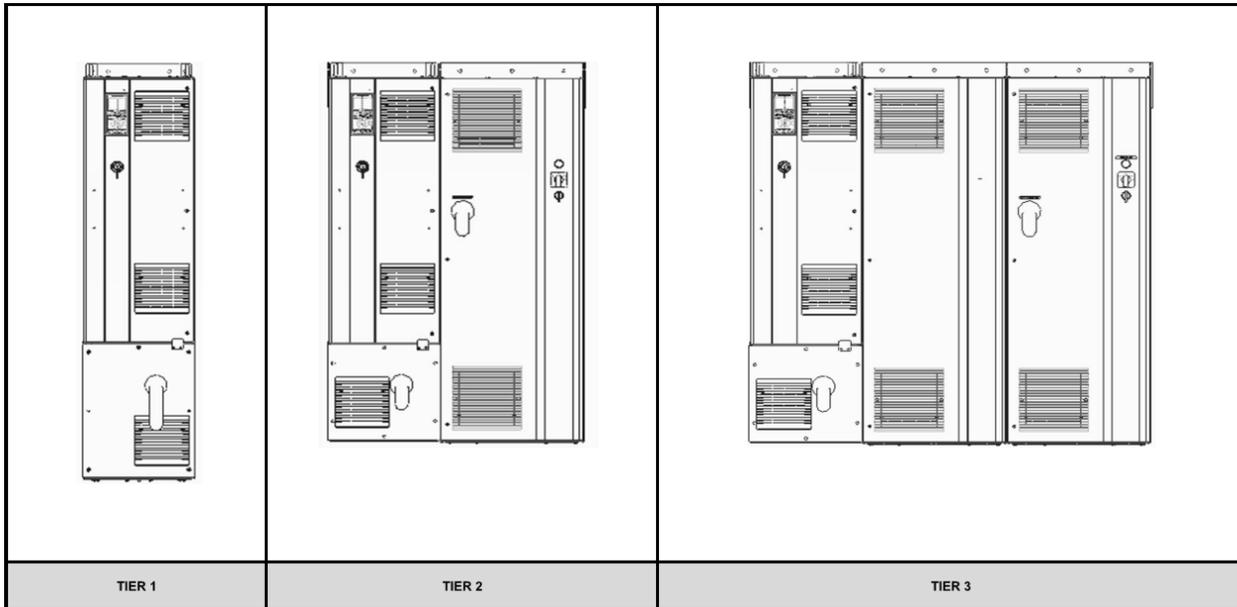


FIGURE 1: TRADITIONAL PANEL (P650) TIER VISUAL IDENTIFICATION

TABLE 2: DANFOSS VLT DRIVE CIRCUIT BREAKERS

Danfoss 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

Character	Parameter	Allowed Value	Description
19	Power Rating Style	X	P Style Power Rating
		N	N Style Power Rating
20	Motor Quantity	S	Single Motor
		C	Contactormotor 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
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
		5	Advanced Control
37	Options C2	X	No Selection
		R	Extended Relay Card
38-39	Options C3	XX	No software option
		10	Synchro. Control
		11	Positioning Control
		12	Center Winder
40	Options D	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 _{Ds}	z/h	I _P	A _{FLX-H}	A _{RIG-H}	A _{FLX-V}	A _{RIG-V}
IBC 2012 / CBC 2013	ICC-ES AC156-10	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>	VLT Automation Drive 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>Typecode</i>	FC-302N132T5E21H4XGC7XXSXXXXANBKC4XXXDX	P/N: 134H0949



UUT-2: D6h FRAME DRIVE

<i>Description:</i>	VLT Automation Drive 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>Typecode:</i>	FC-302N132T7H54H2BGCEXXSXXXXANBKC4XXXDX	P/N:134H0931



UUT-3: D2h FRAME TIER 3 PANEL

<i>Description:</i>	VLT HVAC Drive 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>Typecode:</i>	FC-102N250T4E54H2XGC7XXSXXXXAXBKXXXXDX	P/N: 131Z8887



ATTACHMENT 2: TEST SPECIMEN SUMMARY

UUT-4: D1h FRAME DRIVE

<i>Description:</i>	VLT Automation Drive 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>Typecode:</i>	FC-302N132T7E21H2XGC7XXSXXXXANBKC4XXXDX P/N:134H0952	



UUT-5: D1h FRAME DRIVE

<i>Description:</i>	VLT Automation Drive 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>Typecode:</i>	FC-302N132T7E54H2XGC7XXSXXXXANBKC4XXXDX P/N:134H0950	



UUT-6: D8h FRAME DRIVE

<i>Description:</i>	VLT Automation Drive 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>Typecode:</i>	FC-302N250T5H54H4BGCEXXSXXXXANBKC4XXXDX P/N: 134H0930	

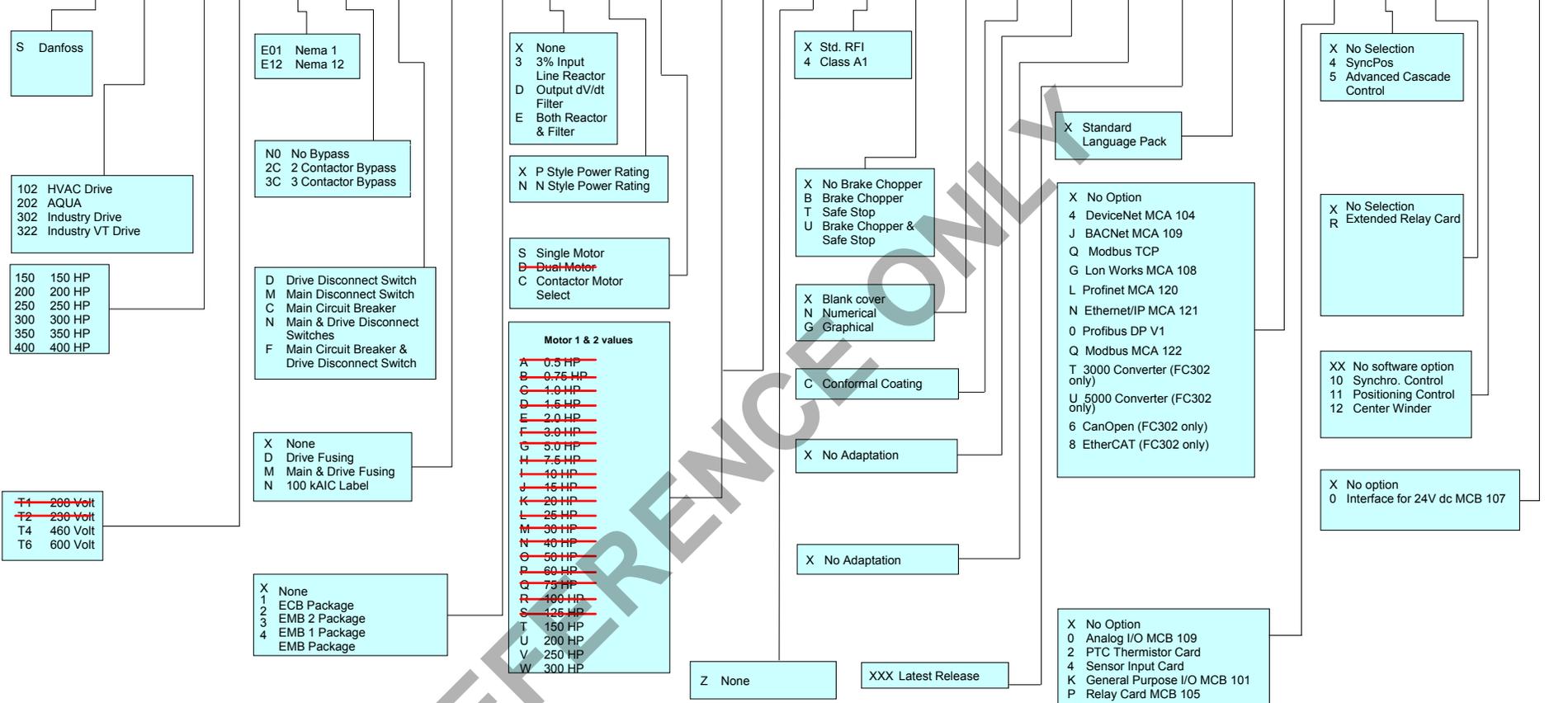


Note: Items below with a strikethrough line (e.g. sample) are excluded from the conclusions and recommendations of this report.

Ordering Information - P650 phase 3 panels (new D Frame only) - Master

Sample type code string: S102050T4E013CMM13XSXXZ1XGCXXXXXXXXXXXXX0

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
Prefix	Drive Series	HP	Voltage	Enclosure Type	Bypass Circuit	Switches	Power Fusing	Control Selection A	Reactors	Power Rating Style	Motor Quantity	Motor 1	Motor 2	Future Option	RFI Filter	Brake & Stop	Display	Coating	Adaptation A	Adaptation B	Software	Software Language	Options A	Options B	Options C1	Options C2	Options C3	Options D
S	102	050	T4	E01	3C	M	M	1	3	X	S	X	X	Z	1	X	G	C	X	X	XXX	X	X	X	X	X	XX	0



ECB Package consists of: Electronically controlled bypass.
 EMB 2 Package consists of: Electro Mechanical style bypass, Common Run/Stop for Drive and Bypass, Bypass Undervoltage protection, Automatic Bypass, Run
 EMB 1 Package consists of: Electro Mechanical style bypass, Common Run/Stop for Drive and Bypass.
 EMB Package consists of: Electro Mechanical style bypass.