

VARIABLE SPEED DRIVE SIZING CHECKLIST

JOB:				PART NUMBER:			
CUSTOMER NAME:							
CUSTOMER ADDRESS:				DATE:			
				APPLICATION:			
				PO #:			
CONTACT NAME:				PREPARED BY:			
STANDARD FEATURES / CAPABILITIES							
ENCLOSURE RATING		INDOOR			OUTDOOR		
q	IP20 CHASSIS	q	TYPE 1	q	TYPE 12	q	TYPE 3R
						q	TYPE 4X
SYSTEM CONTROL							
q	Differential Pressure	q	Pressure	q	Speed	q	Level
						q	Flow
INPUT/OUTPUT OPTIONS - QUANTITY REQUIRED							
ANALOG INPUT		DIGITAL INPUT		ANALOG OUTPUT		DIGITAL OUTPUT	
BMS PROTOCOL							
q	MODBUS RTU	q	BACNET MSTP	q	PROFIBUS	q	DEVICENET
q	NOT REQUIRED					Specify Protocol (OTHER):	
SITE SPECIFIC DATA:							
MEASURED LINE TO LINE VOLTAGE		*V (Average)		**V (IMBALANCE) %		MEASURED LINE TO GROUND VOLTAGE	
L1 - L2						L1 - Ground	
L2 - L3						L2 - Ground	
L1 - L3						L3 - Ground	
VOLTAGE CALCULATIONS:							
MOTOR INFORMATION:							
SPECIFIED INPUT PHASE/VOLTAGE		NOMINAL MOTOR HP:					
q	1PH / 208 - 230 V	q	< 0.75	q	7.5	q	40
q	3PH / 208 - 230 V	q	1	q	10	q	50
q	1PH / 380 - 460 V	q	1.5	q	15	q	60
q	3PH / 380 - 460 V	q	2	q	20	q	75
q	3PH / 575 V	q	3	q	25	q	100
q	1PH / 115 V	q	5	q	30	q	125

MOTOR AMPERAGE (SFA / FLA)	/		AMBIENT TEMPERATURE	
LOAD WIRE LENGTH				
q < 50 Feet	q 300 Feet Max.	q 1000 Feet Max.	q ≤ 1500 Feet	q > 1500 Feet
MOTOR PROTECTION - Over 50 feet will require a reactor or filter to protect the motor.				
q No Filter	q Load Reactor	q DV/DT Filter	q Sine Wave Filter	

For Bell & Gossett Controller Information: www.bellgossett.com

CONTROLS TECHNICAL HOTLINE:
866-673-0445

The type of transformer and the connection configuration feeding a drive plays an important role in its performance and safety. The following is a brief description of some of the more common configurations and a discussion of their virtues and shortcomings. Always ask what type of power system the site has before sizing the drive.

ELECTRICAL POWER SUPPLY VARIATIONS					
Nominal Voltage	V Phase to Gnd			Type of Transformer	NOTES
	L1 to Gnd	L2 to Gnd	L3 to Gnd		
208V	120V			Wye	Most common. Provides rebalancing of unbalanced voltage with a 30° phase shift.
480V	277V				
575V	332V				
240V	Various			Floating Delta	The phases have no true reference to ground
480V					
575V					
240V	0V	240V	240V	Corner Ground Delta	One phase connected to ground. Other 2 phases = line voltage
480V	0V	480V	480V		
240V	208V	120V	120V	Delta with Wild Leg	One phase center tapped to derive a different voltage
480V	415V	240V	240V		
ALL 3 PHASE	Look for 2 xformer cans on the power pole!			Open Delta	Generating 3 phase power from just 2 phases of a transformer
DRIVE MODIFICATIONS BASED UPON POWER SUPPLY					
Wye	Aquavar SPD	Check Line to Ground voltages are within imbalance (3%).			
	Aquavar CPC	Install EMC filter screws EM1/EM3 or F1/F2 depending upon drive frame size.			
	Technologic & IPC	Check Line to Ground voltages are within imbalance (3%).			
Floating Delta	Aquavar SPD	Follow procedure: Disconnecting EMC Filter and MOV's per IM213.			
	Aquavar CPC	Remove the line to ground EMC filter components by removing EM1 and EM3 or F1 and F2. Refer to "IT systems" in the table below.			
	Technologic & IPC	Set Parameter 14-50 RFI FILTER to [Off].			
Corner Grounded Delta	Aquavar SPD	Follow procedure: Disconnecting EMC Filter and MOV's per IM213.			
	Aquavar CPC	For R4 or N4 frame size, remove EM3. Leave EM1 connected. For R5/N5 and R6/N6 leave the screws in F1/F2 installed (Refer to the "Corner grounded TN systems" column in the table below).			
	Technologic & IPC	Set Parameter 14-50 RFI FILTER to [Off].			
Delta with Wild Leg	Aquavar SPD	Follow procedure: Disconnecting EMC Filter and MOV's per IM213.			
	Aquavar CPC	Refer to the "Corner grounded TN systems" column in the table below.			
	Technologic & IPC	Set Parameter 14-50 RFI FILTER to [Off].			

Open Delta	Aquavar SPD	Use a derated (oversized) three phase drive wired for single phase input supply. Drive output amperage to be derated by 50% to accommodate the single phase input.
	Aquavar CPC	
	Technologic & IPC	Use dedicated single phase drive wired with the balanced input legs.

Table to be used for CPC ONLY	Frame Sizes	Screw	Symmetrically Grounded TN Systems (TN-S Systems)	Corner Grounded TN Systems	IT Systems (ungrounded or high- resistance grounded [$> 30 \text{ ohm}$])
	R1...R3	EM1	x	x	•
		EM3 ¹	x	•	•
	R4	EM1	x	x	—
		EM3 ¹	x	—	—
	R5...R6	F1	x	x	—
		F2	x	x	—
	x = Install the screw. (EMC filter will be connected) • = Replace the screw with the provided polyamide screw. (EMC filter will be connected) — = Remove the screw. (EMC filter will be connected) 1 = ACS550-U1 drives are shipped with screw EM3 already removed.				

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