

ALTERNATOR E1X13M F/4

Three-phase brushless synchronous alternator with AVR - 4 poles

Technical Data Sheet

E1X13M F/4

COMMON DATA

Rated Power at 50Hz	kVA	16	
Rated Power at 60Hz	kVA	19	
Rated Power Factor		0.8	
Nominal Temperature	°C	40	
Control System		Self excited	
Execution		brushless	
Regulation Type		AVR	
Insulation Class		H	
Protection		IP23	
Maximum Overspeed	rpm	2250	
Overload		110% of rated power for one hour in a cycle of 6 hours	
Air Flow Requirement	m ³ /min	4.1 at 50Hz	4.9 at 60Hz
Telephone Interference		<2%	
R.F.I. Suppression		Standard EN55011	

REGULATION DATA

AVR	HVR11	HVR30
Sensing	Single phase	Three phase
Voltage Regulation	± 1%	
Sustained Short Circuit	250% of rated current	

WINDING DATA

Stator Winding	Double layer with auxiliary winding	
Rotor Winding	with damping cage	
Winding Pitch	2/3	
Number of Leads of Stator Winding	12	
Stator Winding Resistance	0.64Ω at 20°C	
Rotor Winding Resistance	9.86Ω at 20°C	
Exciter Stator Resistance	16.5Ω at 20°C	
Exciter Rotor Resistance	2.15Ω at 20°C	
THD at full load	<3%	
THD at no load	<3%	
Excitation at no load	A _{dc}	0.58
Excitation at full load	A _{dc}	1.63

STANDARD

References	EN60034-1, ISO8538, EN55011
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ELECTRICAL DATA

Frequency		50Hz - 1500rpm				60Hz - 1800rpm			
Voltage Series Star	V	380/220	400/230	415/240	440/254	415/240	440/254	460/266	480/277
Voltage Parallel Star	V	190/110	200/115	207/120	220/127	207/120	220/127	230/133	240/138
Voltage Series Delta	V	220	230	240	254	240	254	266	277
Rated Power in Class H (125°C/40°C)	kVA	16	16	15.5	14	17	18.5	19	19
	kW	12.8	12.8	12.4	11.2	13.6	14.8	15.2	15.2
Rated Power in Class F (105°C/40°C)	kVA	14.6	14.6	14.2	12	15.5	17	17.5	17.5
	kW	11.68	11.68	11.36	9.6	12.4	13.6	14	14
Rated Power Standby (150°C/40°C)	kVA	17.5	17.5	17	15	18.5	20	21	21
	kW	14	14	13.6	12	14.8	16	16.8	16.8
Rated Power Standby (163°C/27°C)	kVA	18	18	17.5	15.5	19	20.5	21.5	21.5
	kW	14.4	14.4	14	12.4	15.2	16.4	17.2	17.2

EFFICIENCY IN CL. H

4/4		86.0%						86.4%
3/4		86.4%						86.5%
2/4		85.1%						85.6%
1/4		81.5%						81.8%

REACTANCES AND TIME CONSTANTS

pcc		0.76							
X _d - dir. axis synchronous		288%	260%	235%	188%	313%	301%	283%	260%
X' _d - dir. axis transient		22.2%	20.0%	18.1%	14.5%	24.1%	23.2%	21.8%	20.0%
X'' _d - dir. axis subtransient		8.5%	7.7%	7.0%	5.6%	9.3%	8.9%	8.4%	7.7%
X _q - quad. axis reactance		155%	140%	127%	101%	168%	162%	152%	140%
T' _{do} - O.C. field time constant		402 ms							
T' _d - Transient time constant		31 ms							
T'' _d - Sub-transient time constant		6 ms							

MECHANICAL DATA

Bearing non drive end	6305-2Z-C3		
Bearing drive end (B3/B14 form)	6208-2Z-C3		
Weight of generator	in B2	kg	100
	in B3/B14	kg	95.9

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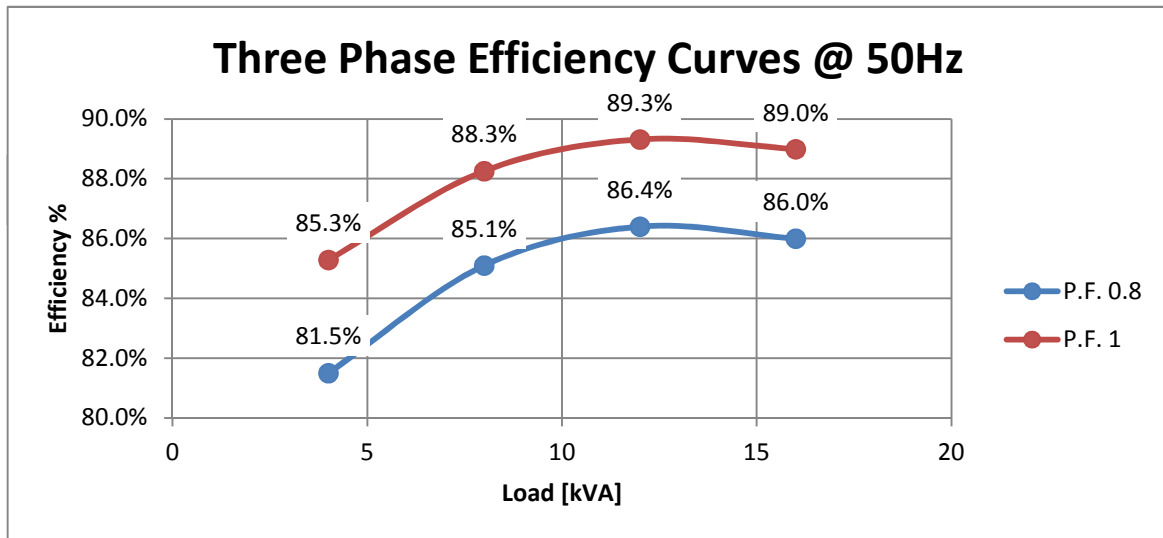
MOMENT OF INERZIA

SAE	kg·m ²	0.1
B3/B14	kg·m ⁴	0.091

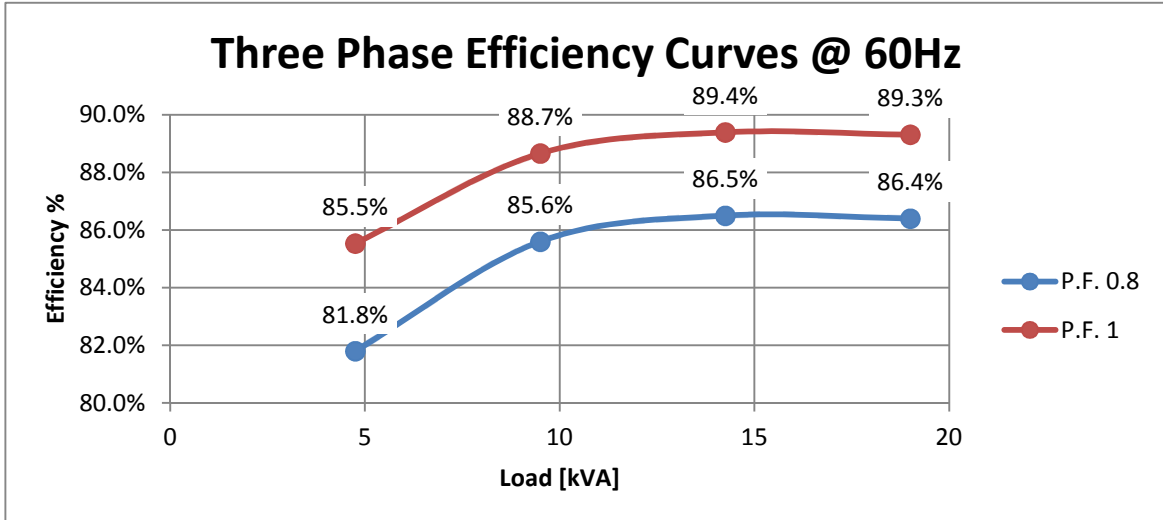
POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

Altitude	Ambient temperature				
	25°C	40°C	45°C	50°C	55°C
< 1000m	1.09	1	0.96	0.93	0.91
1000m - 1500m	1.01	0.96	0.92	0.89	0.87
1500m - 2000m	0.96	0.91	0.87	0.84	0.83
2000m - 3000m	0.9	0.85	0.81	0.78	0.76

EFFICIENCY 50Hz

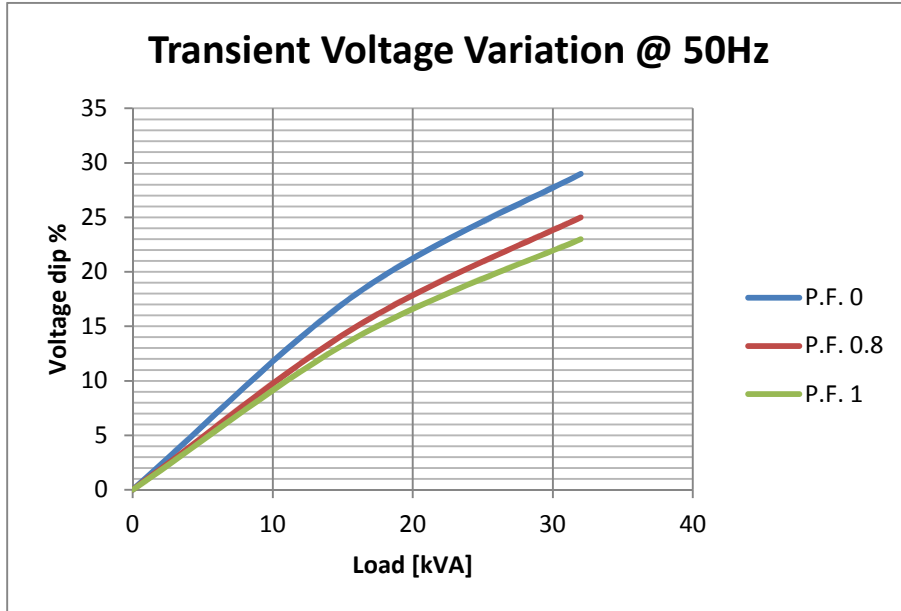


EFFICIENCY 60Hz



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TRANSIENT VOLTAGE VARIATION 50Hz



TRANSIENT VOLTAGE VARIATION 60Hz

