



ALTERNATOR PRO22M F/4

three-phase brushless synchronous alternator with AVR - 4 poles

Technical Data Sheet

PRO22M F/4

COMMON DATA

Rated Power at 50Hz	kVA	150
Rated Power at 60Hz	kVA	180
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	20.1 at 50Hz 23.5 at 60Hz
R.F.I. Suppression		Standard EN55011

REGULATION DATA

AVR	HVR11	HVR30
Sensing	single-phase	three-phase
Voltage Regulation	±1%	±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	12
Stator Winding Resistance	0.012 at 20°C
Rotor Winding Resistance	4.52 at 20°C
Exciter Stator Resistance	14.3 at 20°C
Exciter Rotor Resistance	0.47 at 20°C
THD at full load	<3%
THD at no load	<3%
Excitation at no load	A _{dc} 0.76
Excitation at full load	A _{dc} 2.5

STANDARD

References	EN60034-1 ISO8528-3 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
Rated Power in Class H (125°C/40°C)	kVA	150	150	150	125	150	170	180	180
	kW	120	120	120	100	120	136	144	144
Rated Power in Class F (105°C/40°C)	kVA	139.5	139.5	139.5	117	139	158	167.5	167.5
	kW	111.6	111.6	111.6	93.6	111.2	126.4	134	134
Rated Power Standby (150°C/40°C)	kVA	162	162	162	136	162	184	195	195
	kW	129.6	129.6	129.6	108.8	129.6	147.2	156	156
Rated Power Standby (163°C/27°C)	kVA	169.5	169.5	169.5	142	170	192	203.5	203.5
	kW	135.6	135.6	135.6	113.6	136	153.6	162.8	162.8

EFFICIENCY IN CL. H

4/4		92.6%						92.8%
3/4		92.8%						93.0%
2/4		91.0%						91.7%
1/4		88.5%						89.9%

REACTANCES AND TIME CONSTANTS

pcc		0.44						
X _d - dir. axis synchronous	321%	290%	269%	200%	323%	326%	316%	290%
X' _d - dir. axis transient	19.9%	18.0%	16.7%	12.4%	20.1%	20.2%	19.6%	18.0%
X'' _d - dir. axis subtransient	9.4%	8.5%	7.9%	5.9%	9.5%	9.6%	9.3%	8.5%
X _q - quad. axis reactance	214%	193%	179%	133%	215%	217%	210%	193%
T' _{do} - O.C. field time constant	310ms							
T' _d - Transient time constant	23ms							
T'' _d - Sub-transient time constant	10ms							

MECHANICAL DATA

Bearing non drive end	6309-2RS-C3		
Bearing drive end (B3/B14 form)	6314-2RS-C3		
Weight of generator	in B2	kg	499
	in B3/B14	kg	501
	in B3/B9	kg	\

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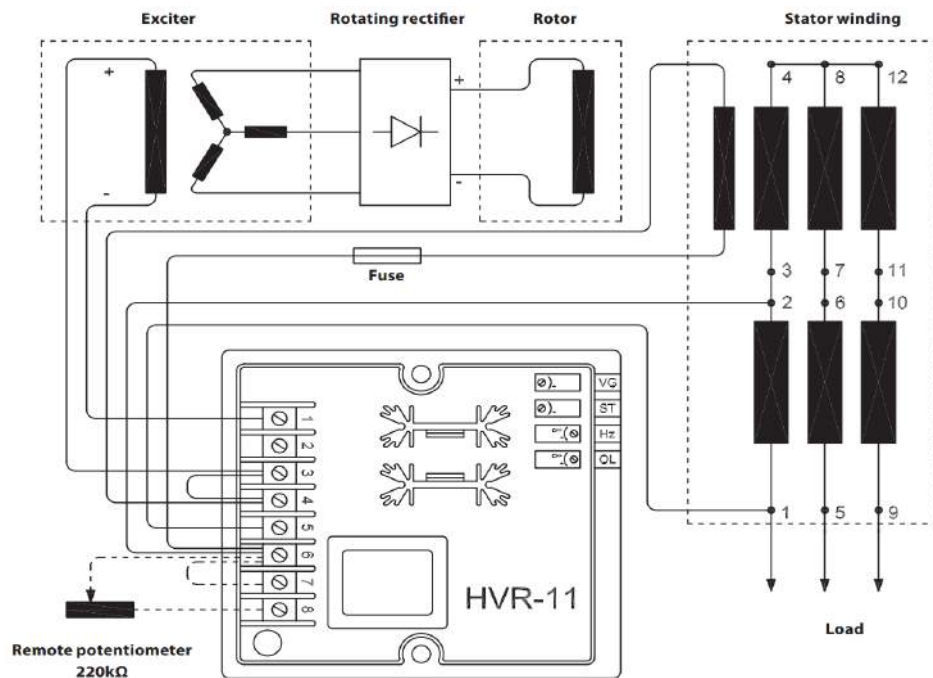
MOMENT OF INERZIA

B3/B9	kg·m ²	\
SAE 7½	kg·m ²	\
SAE 8	kg·m ²	\
SAE 10	kg·m ²	\
SAE 11½	kg·m ²	1.48
SAE 14	kg·m ²	1.628
SAE 18	kg·m ²	\
B3/B14	kg·m ²	1.402

POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

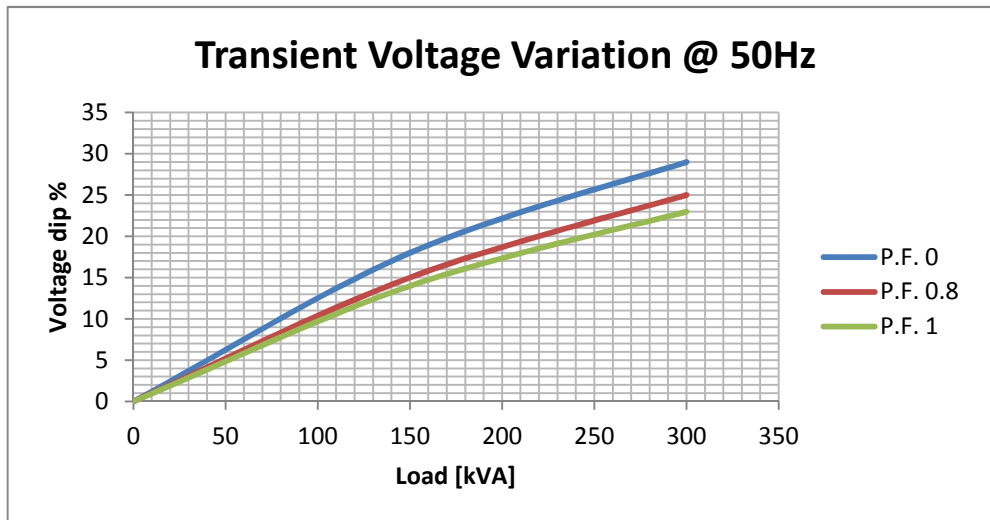
Altitude	Ambient temperature				
	25°C	40°C	45°C	50°C	55°C
< 1000m	1.09	1	0.96	0.93	0.91
1000m - 1500m	1.01	0.96	0.92	0.89	0.87
1500m - 2000m	0.96	0.91	0.87	0.84	0.83
2000m - 3000m	0.9	0.85	0.81	0.78	0.76

WIRING DIAGRAM

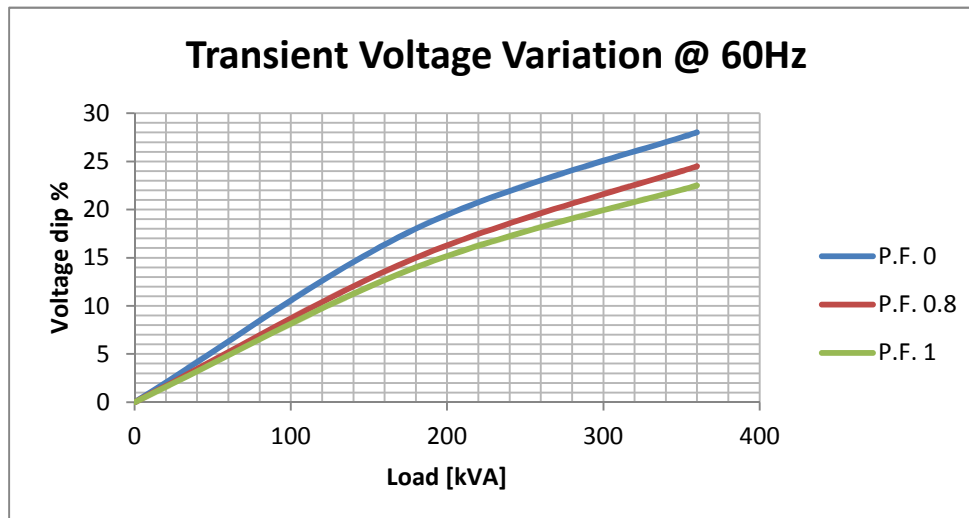


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TRANSIENT VOLTAGE VARIATION 50Hz

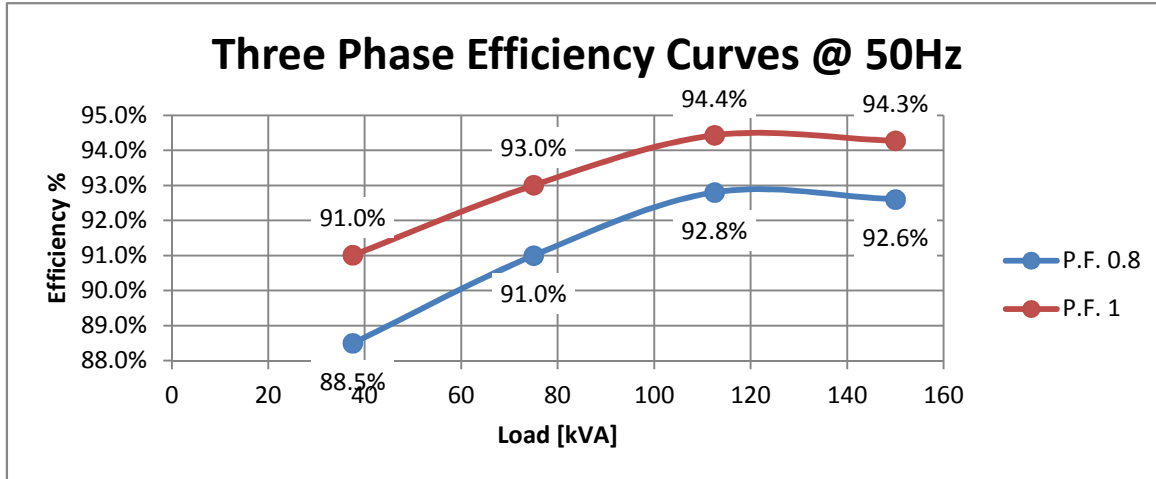


TRANSIENT VOLTAGE VARIATION 60Hz

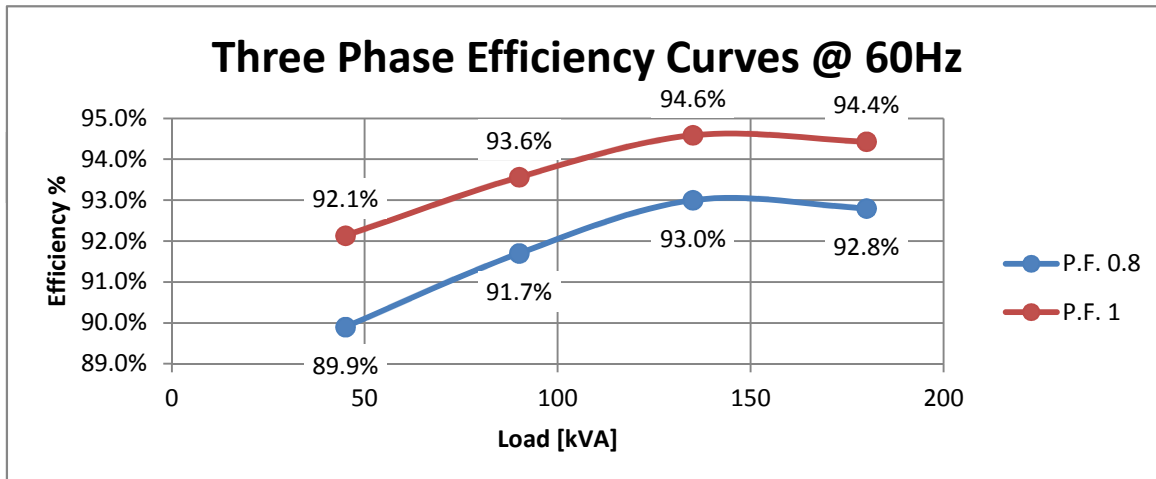


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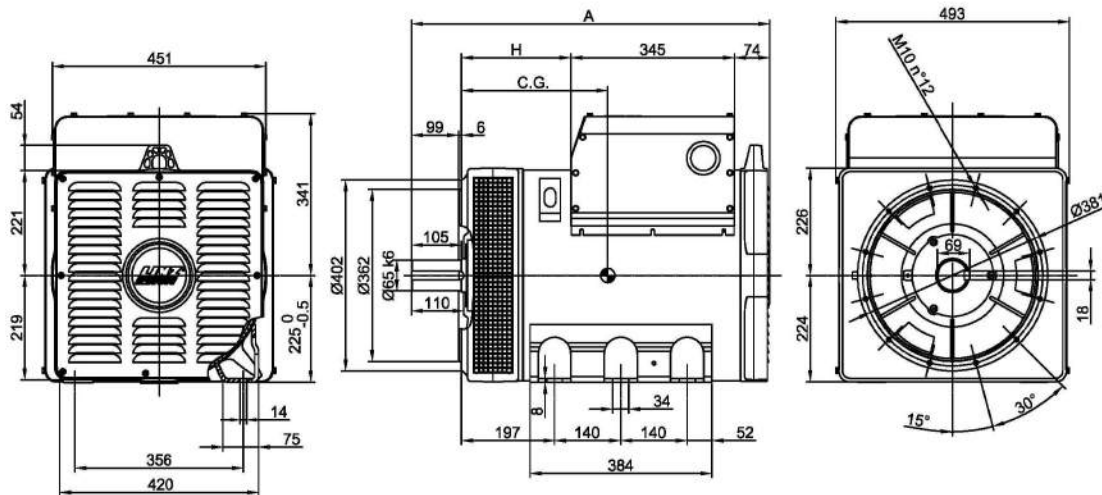
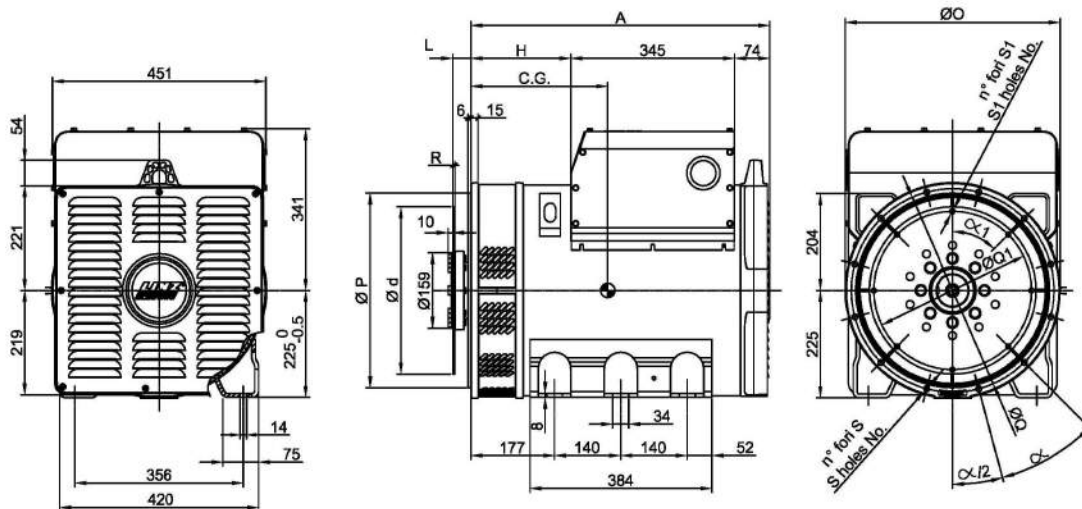
EFFICIENCY 50Hz



EFFICIENCY 60Hz



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FORMA - FORM B3/B14

FORMA - FORM SAE


FORMA - FORM		A	H
B3/B14	PRO 22S	756	232
	PRO 22M	886	362
SAE	PRO 22S	631	212
	PRO 22M	761	342

TIPO - TYPE	C.G.
PRO22S A/4 B3/B14	284
PRO22S B/4 B3/B14	293
PRO22S C/4 B3/B14	299
PRO22S D/4 B3/B14	313
PRO22M E/4 B3/B14	359
PRO22M F/4 B3/B14	377

TIPO - TYPE	C.G.
PRO22S A/4 SAE	270
PRO22S B/4 SAE	279
PRO22S C/4 SAE	285
PRO22S D/4 SAE	298
PRO22M E/4 SAE	344
PRO22M F/4 SAE	362

SAE N.	FLANGIE - FLANGES - BRIDAS					
	Ø O	Ø P	Ø Q	n. fori holes No.	S	α
3	454	409.6	428.6	12	12	30°
2	492	447.68	466.7			
1	552	511.18	530.2			

SAE N.	GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS						
	L	Ø d	Ø Q1	n. fori holes No.	S1	α1	R
11 1/2	39.6	352.42	333.37	8	10.5	45°	6
14	25.4	466.72	438.15	8	14	45°	