

## **ALTERNATOR PRO22M G/4**

*Three-phase brushless synchronous alternator with AVR - 4 poles*

Technical Data Sheet

## PRO22M G/4

### COMMON DATA

Rated Power at 50Hz	kVA	160	
Rated Power at 60Hz	kVA	192	
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 <sup>3</sup> /min	22.1 at 50Hz	25.8 at 60Hz
Telephone Interference		<2%	
R.F.I. Suppression		Standard EN55011	

### REGULATION DATA

AVR	HVR11	HVR30
Sensing	Single phase	Three phase
Voltage Regulation	± 2%	
Sustained Short Circuit	>250% of rated current	

### WINDING DATA

Stator Winding	Single layer with auxiliary winding	
Rotor Winding	with damping cage	
Number of Leads of Stator Winding	6	
Stator Winding Resistance	0.022Ω at 20°C	
Rotor Winding Resistance	4.52Ω at 20°C	
Exciter Stator Resistance	14.3Ω at 20°C	
Exciter Rotor Resistance	0.72Ω at 20°C	
THD LL at full load	<4%	
THD LL at no load	<2%	
THD LN at full load	<7%	
THD LN at no load	<7%	
Excitation at no load	A <sub>dc</sub>	0.76
Excitation at full load	A <sub>dc</sub>	2.65

### STANDARD

References	EN60034-1, ISO8538, EN55011
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## PRO22M G/4

### ELECTRICAL DATA

Frequency		50Hz - 1500rpm				60Hz - 1800rpm			
		380/220	400/230	415/240	440/254	415/240	440/254	460/266	480/277
Voltage Star Connection	V	380/220	400/230	415/240	440/254	415/240	440/254	460/266	480/277
Voltage Delta Connection	V	220	230	240	254	240	254	266	277
Rated Power in Class H (125°C/40°C)	kVA	160	160	155	130	170	185	192	192
	kW	128	128	124	104	136	148	153.6	153.6
Rated Power in Class F (105°C/40°C)	kVA	148	148	142	115	157	170	177	177
	kW	118.4	118.4	113.6	92	125.6	136	141.6	141.6
Rated Power Standby (150°C/40°C)	kVA	168	168	162	140	180	194	201	201
	kW	134.4	134.4	129.6	112	144	155.2	160.8	160.8
Rated Power Standby (163°C/27°C)	kVA	172	172	166	144	186	200	207	207
	kW	137.6	137.6	132.8	115.2	148.8	160	165.6	165.6

### EFFICIENCY IN CL. H

4/4		92.4%						92.6%
3/4		92.6%						92.8%
2/4		91.0%						91.5%
1/4		85.5%						89.7%

### REACTANCES AND TIME CONSTANTS

pcc		0.43						
X <sub>d</sub> - dir. axis synchronous		342%	309%	278%	207%	366%	354%	336%
X' <sub>d</sub> - dir. axis transient		21.1%	19.0%	17.1%	12.8%	22.5%	21.8%	20.7%
X'' <sub>d</sub> - dir. axis subtransient		10.0%	9.0%	8.1%	6.0%	10.7%	10.3%	9.8%
X <sub>q</sub> - quad. axis reactance		228%	206%	185%	138%	244%	236%	224%
T' <sub>do</sub> - O.C. field time constant		315 ms						
T' <sub>d</sub> - Transient time constant		25 ms						
T'' <sub>d</sub> - Sub-transient time constant		10 ms						

### 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

# PRO22M G/4

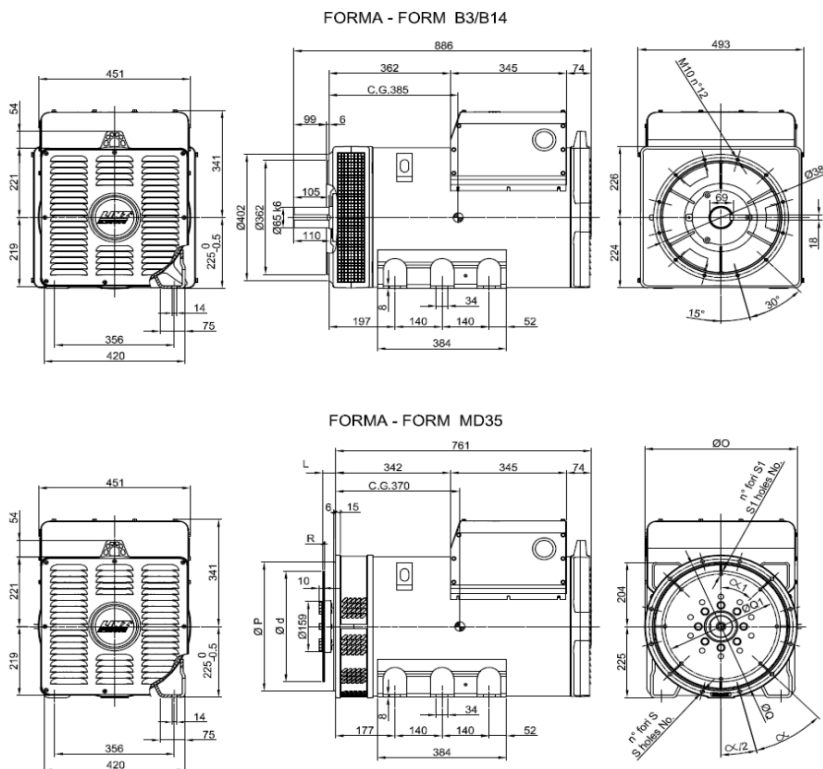
## MOMENT OF INERZIA

SAE 10	kg·m <sup>2</sup>	1.388
SAE 11½	kg·m <sup>2</sup>	1.407
SAE 14	kg·m <sup>2</sup>	1.556
B3/B14	kg·m <sup>2</sup>	1.324

## 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

## DIMENSIONS



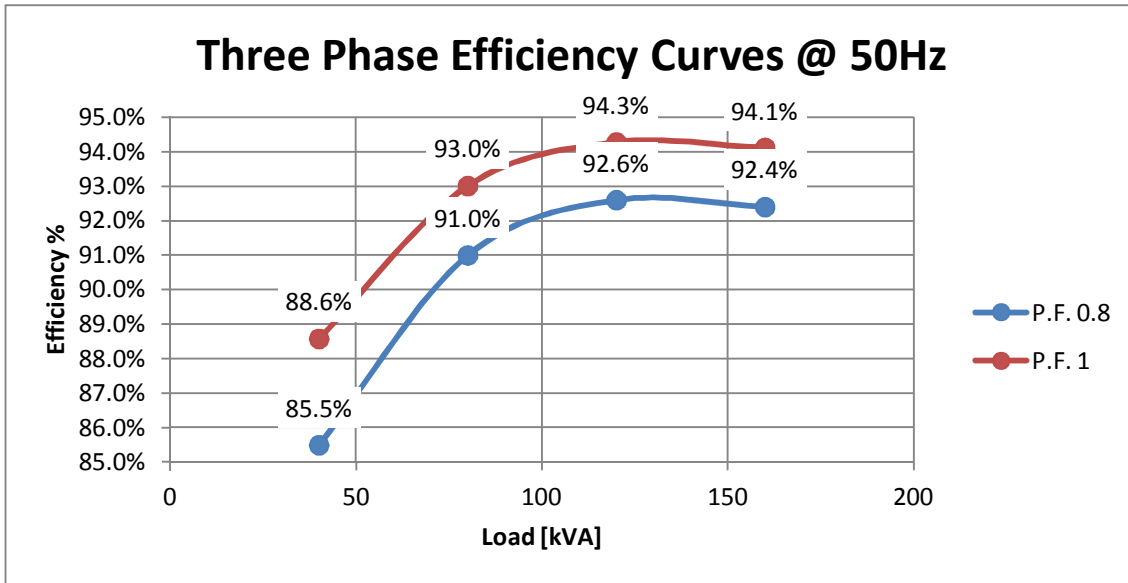
SAE N.	Ø O	Ø P	Ø Q	n, fori holes No.	S	α
3	454	409.6	426.6			
2	492	447.68	466.7	12	12	30°
1	552	511.18	530.2			

SAE N.	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°	
14	25.4	466.72	438.15	8	14	45°	6

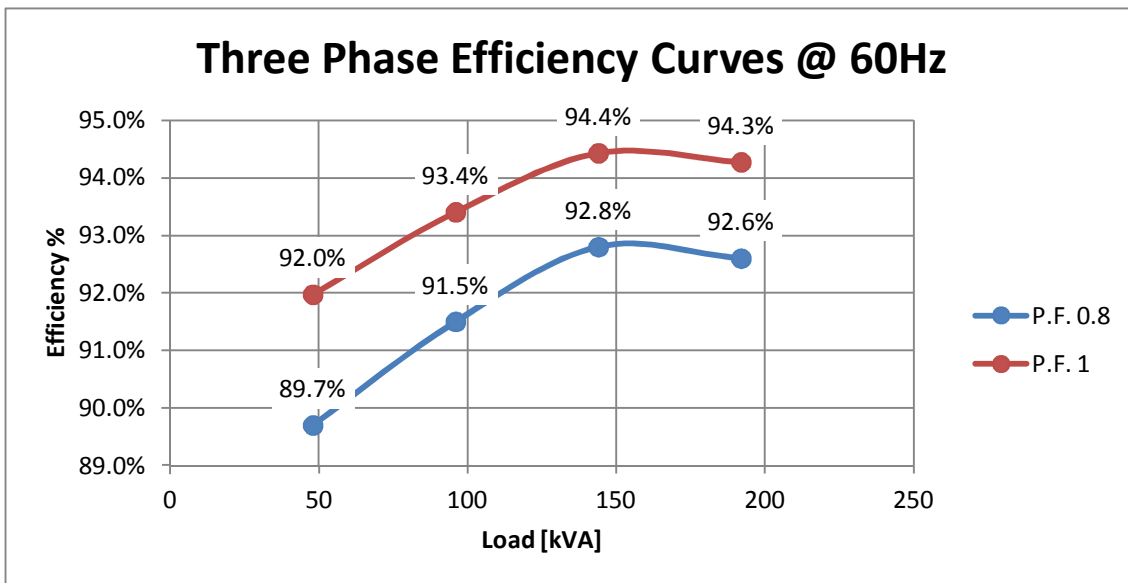
N.B. PRO22M G/4 has the same dimensions of PRO22M F/4

**PRO22M G/4**

**EFFICIENCY 50Hz**

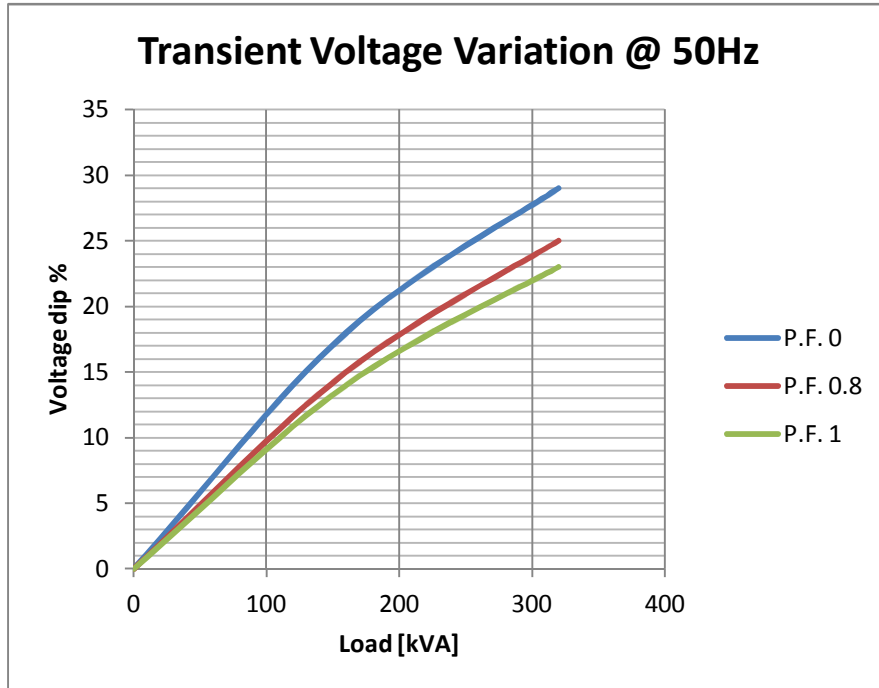


**EFFICIENCY 60Hz**



**PRO22M G/4**

**TRANSIENT VOLTAGE VARIATION 50Hz**



**TRANSIENT VOLTAGE VARIATION 60Hz**

