

TECHNICAL DATA SHEET



**ALTERNATOR PRO22S A/4**

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

## PRO22S A/4

### COMMON DATA

Rated Power at 50Hz	kVA	63	
Rated Power at 60Hz	kVA	76	
Rated Power Factor		0,8	
Nominal Temperature	°C	40	
Control System		self-excited	
Execution		brushless	
Regulation Type		AVR	
Insulation Class		H	
Protection		IP23	
Maximum Over speed	rpm	2250	
Overload		110% of rated power for one hour in a cycle of 6 hours	
Air Flow Requirement	m <sup>3</sup> /min	18,2 at 50Hz	21,3 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	Ω	0,049 at 20°C	
Rotor Winding Resistance	Ω	2,38 at 20°C	
Exciter Stator Resistance	Ω	14,3 at 20°C	
Exciter Rotor Resistance	Ω	0,47 at 20°C	
THD at full load	<3%		
THD at no load	<3%		
Excitation at no load	Adc	0,8	
Excitation at full load	Adc	2,5	

### STANDARD

References	EN60034-1 ISO8528-3 EN55011
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### ON REQUEST

UL 1446, Systems of Insulating Materials - General CSA-C22.2 No. 0, Appendix B, General Requirements - Canadian Electrical Code, Part I  
 CAN/CSA - C22.2 No. 100-14 (R2009) Motors and Generators, UL1004-1 2nd ed. Rotating Electrical Machines - General Requirements, UL1004-4 2nd ed. Electric Generators

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### ELECTRICAL DATA

Frequency		50Hz - 1500rpm					60Hz - 1800rpm				
Voltage	V	Double Delta	Series High Wye Parallel Low Wye			Double Delta	Series High Wye Parallel Low Wye				
		115/230	380/220 190/110	400/230 200/115	415/240 208/120	440/254 220/127	138/277	415/240 208/120	440/254 220/127	460/266 230/133	480/277 240/138
Rated Power in Class H (125°C/40°C)	kVA	41	63	63	63	52	50	65	72	76	76
	kW	32,8	50,4	50,4	50,4	41,6	40	52	57,6	60,8	60,8
Rated Power in Class F (105°C/40°C)	kVA	38,5	59	59	58	48	46	61	67	70,5	70,5
	kW	30,8	47,2	47,2	46,4	38,4	36,8	48,8	53,6	56,4	56,4
Rated Power Standby (150°C/40°C)	kVA	45	69	69	67	55	54	71	78,5	83	83
	kW	36	55,2	55,2	53,6	44	43,2	56,8	62,8	66,4	66,4
Rated Power Standby (163°C/27°C)	kVA	46,5	71	71	69	57	56	73,5	81	85,5	85,5
	kW	37,2	56,8	56,8	55,2	45,6	44,8	58,8	64,8	68,4	68,4

### EFFICIENCY IN CL. H

4/4			90,1%							90,4%
3/4			90,4%							90,6%
2/4			87,7%							89,3%
1/4			84,0%							87,5%

### REACTANCES AND TIME CONSTANTS

pcc		0,48								
X <sub>d</sub>	- dir. axis synchronous	335%	302%	281%	206%		346%	340%	329%	302%
X' <sub>d</sub>	- dir. axis transient	21,1%	19,0%	17,7%	13,0%		21,7%	21,4%	20,7%	19,0%
X'' <sub>d</sub>	- dir. axis subtransient	10,5%	9,5%	8,8%	6,5%		10,9%	10,7%	10,3%	9,5%
X <sub>q</sub>	- quad. axis reactance	212%	191%	177%	130%		219%	215%	208%	191%
T' <sub>do</sub>	- O.C. field time constant						236ms			
T' <sub>d</sub>	- Transient time constant						20ms			
T'' <sub>d</sub>	- Sub-transient time constant						12ms			

### MECHANICAL DATA

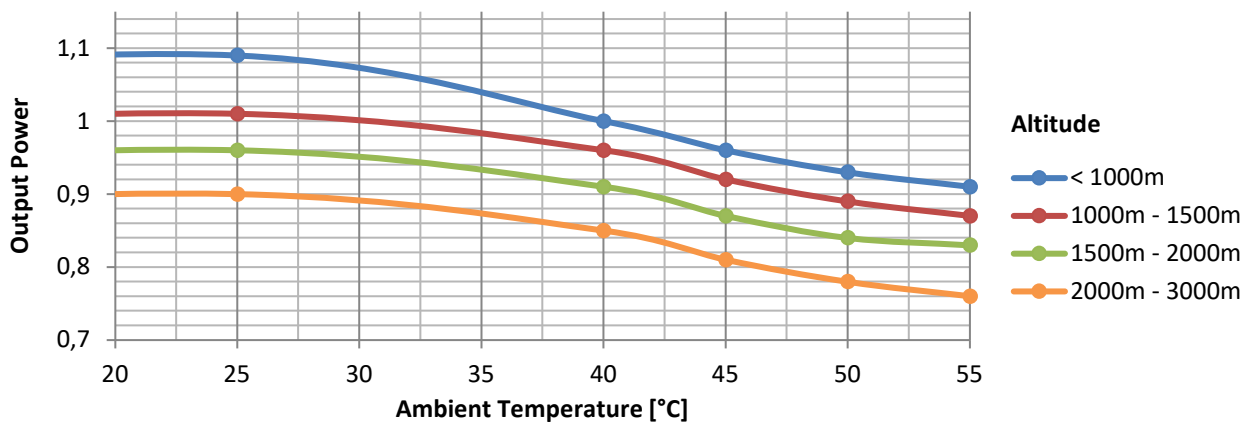
Bearing non drive end				6309-2RS-C3
Bearing drive end (B3/B14 form)				6314-2RS-C3
Weight of generator	in B2	kg		280
	in B3/B14	kg		291
	in B3/B9	kg		\

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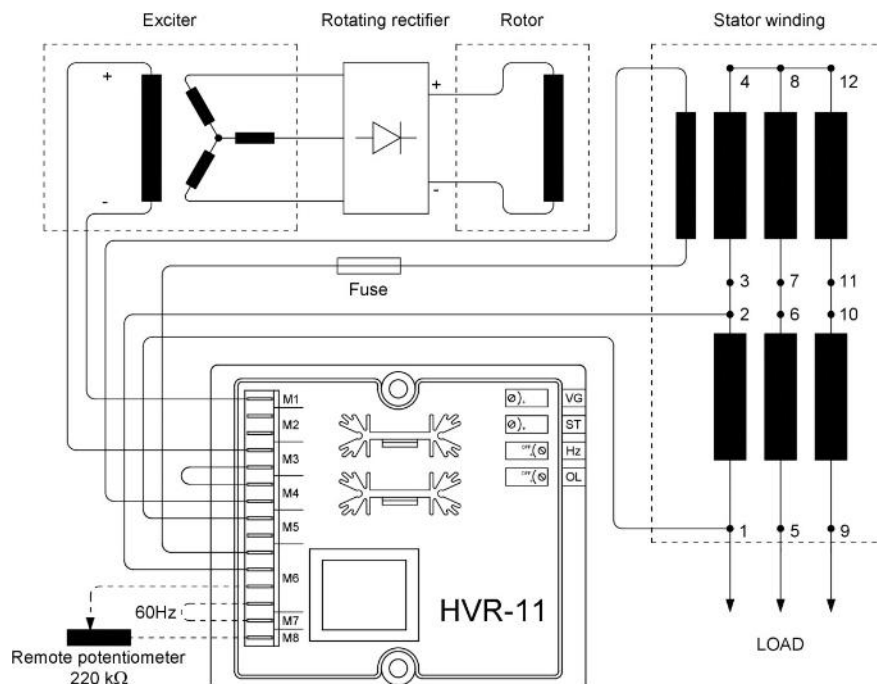
## MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	\
SAE 8	kg·m <sup>2</sup>	\
SAE 10	kg·m <sup>2</sup>	\
SAE 11½	kg·m <sup>2</sup>	0,729
SAE 14	kg·m <sup>2</sup>	0,878
SAE 18	kg·m <sup>2</sup>	\
B3/B14	kg·m <sup>2</sup>	0,652

## DERATING CURVES



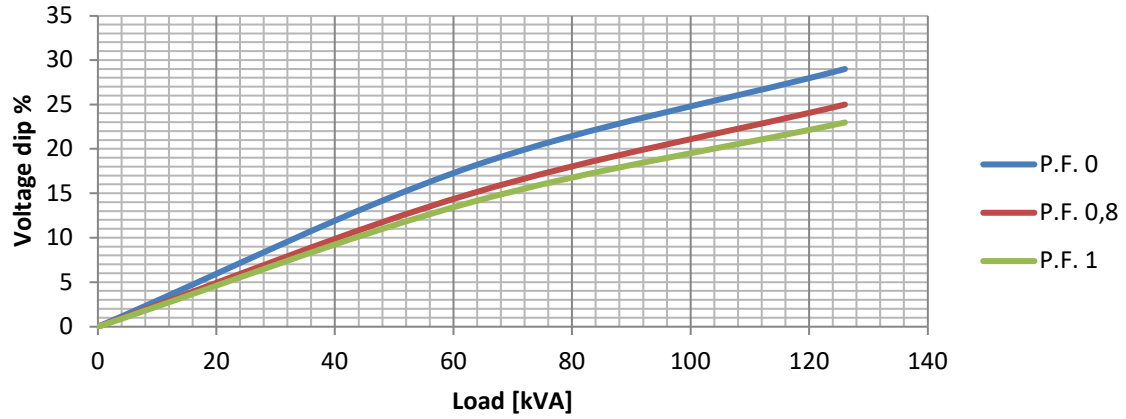
## WIRING DIAGRAM



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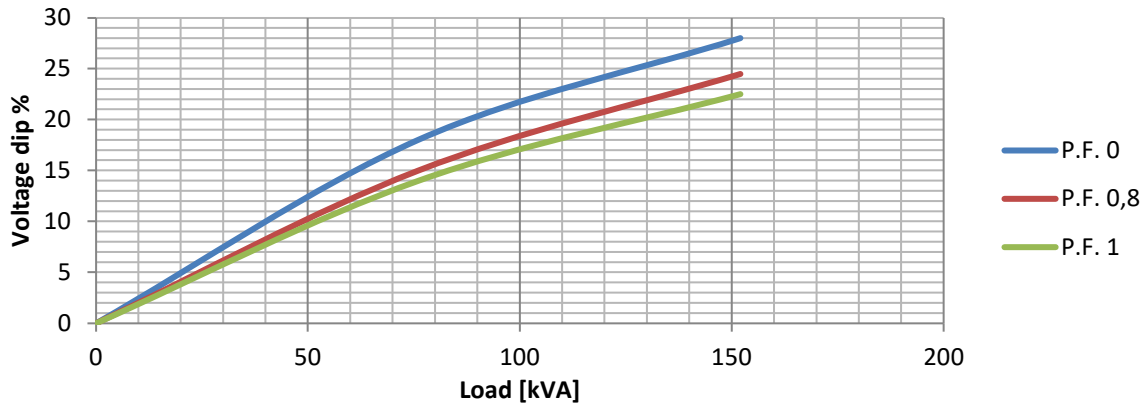
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



## TRANSIENT VOLTAGE VARIATION 60Hz

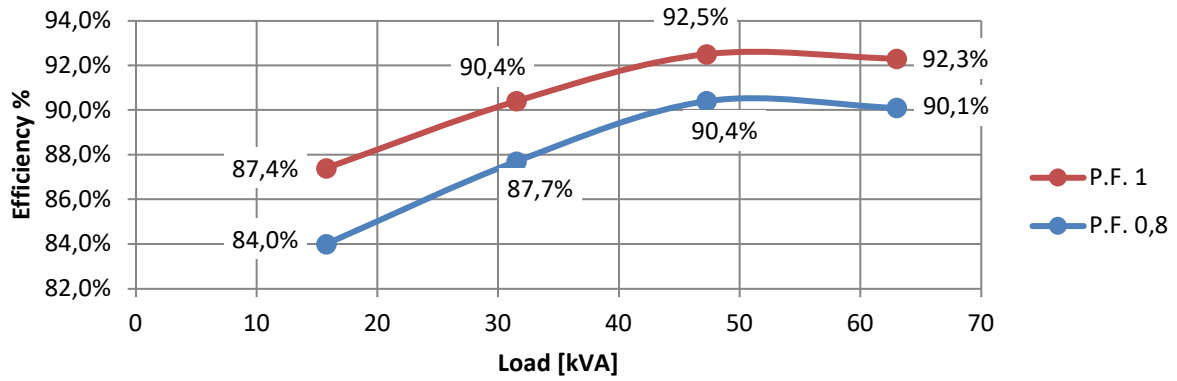
### Transient Voltage Variation @ 60Hz



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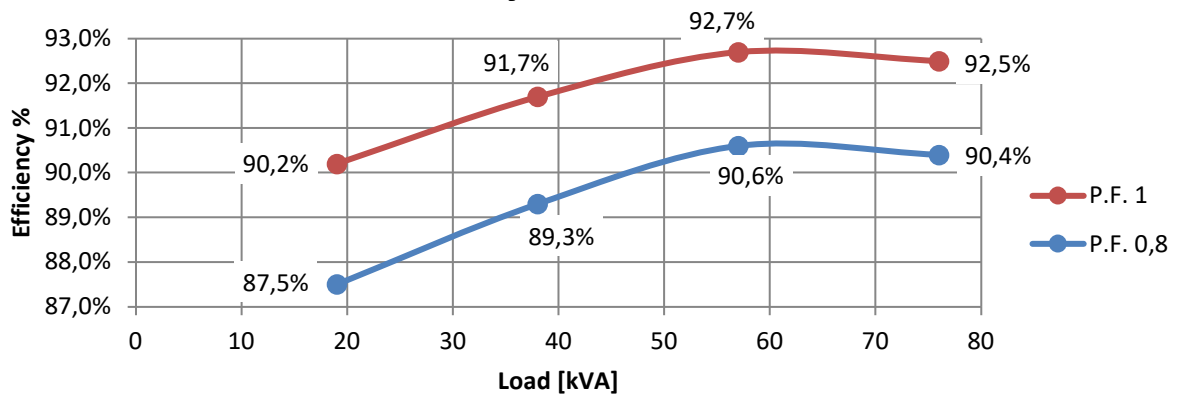
### EFFICIENCY 50Hz

#### Efficiency Curves @ 50Hz



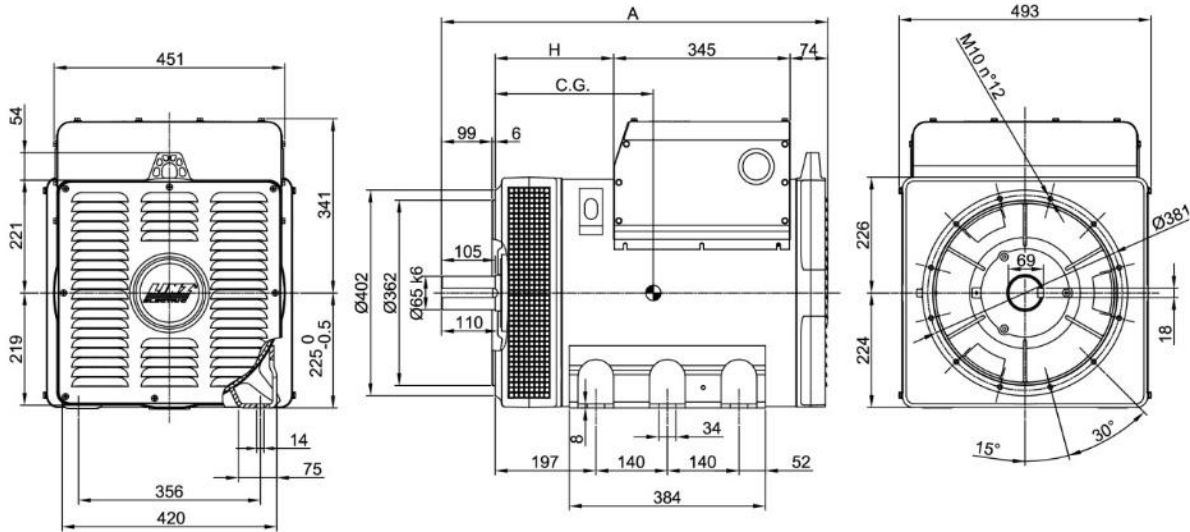
### EFFICIENCY 60Hz

#### Efficiency Curves @ 60Hz

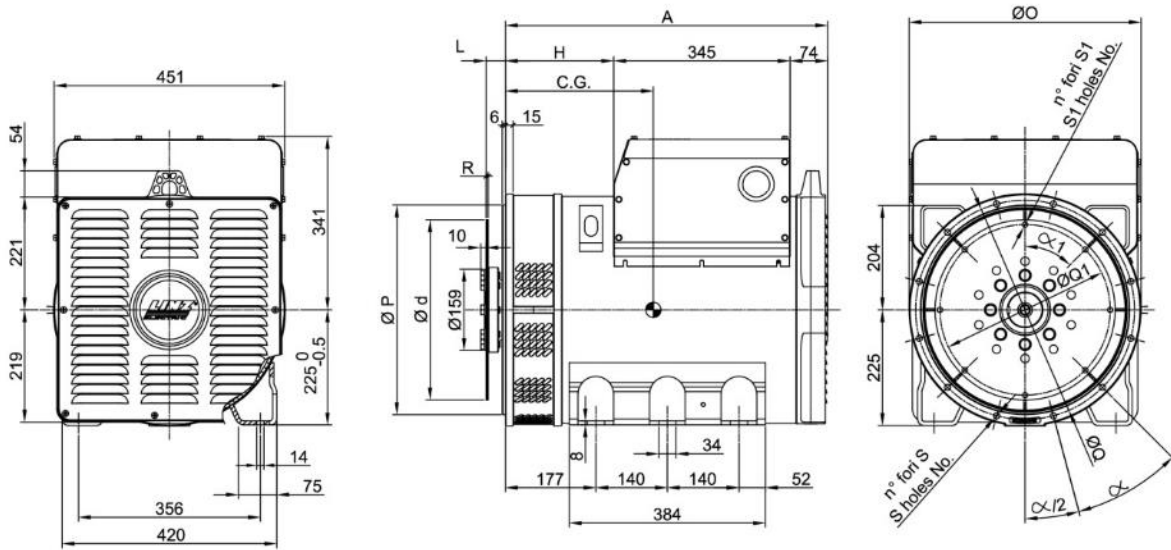


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## FORMA - FORM B3/B14



## 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					
	∅ O	∅ P	∅ 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	∅ d	∅ 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°	