

TECHNICAL DATA SHEET



**ALTERNATOR PRO18S A/4**

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

## PRO18S A/4

### COMMON DATA

Rated Power at 50Hz	kVA	20	
Rated Power at 60Hz	kVA	24	
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	5,5 at 50Hz	5,7 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	0,224 at 20°C	
Rotor Winding Resistance	Ω	2,43 at 20°C	
Exciter Stator Resistance	Ω	15 at 20°C	
Exciter Rotor Resistance	Ω	0,72 at 20°C	
THD at full load	<3%		
THD at no load	<3%		
Excitation at no load	Adc	0,92	
Excitation at full load	Adc	2,15	

### 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	480/277 240/154
Rated Power in Class H (125°C/40°C)	kVA	13	20	20	20	18	15,6	21	23	24	24
	kW	10,4	16	16	16	14,4	12,5	16,8	18,4	19,2	19,2
Rated Power in Class F (105°C/40°C)	kVA	12	18,5	18,5	18,5	17	14,5	20	21	22	22
	kW	9,6	14,8	14,8	14,8	13,6	11,6	16	16,8	17,6	17,6
Rated Power Standby (150°C/40°C)	kVA	14,5	22	22	21,5	20	17	24	25	26	26
	kW	11,6	17,6	17,6	17,2	16	13,6	19,2	20	20,8	20,8
Rated Power Standby (163°C/27°C)	kVA	15	23	23	22,5	21	17,5	25	26	27	27
	kW	12	18,4	18,4	18	16,8	14	20	20,8	21,6	21,6

### EFFICIENCY IN CL. H

4/4			86,1%							87,8%
3/4			86,3%							88,1%
2/4			84,5%							86,3%
1/4			82,0%							83,8%

### REACTANCES AND TIME CONSTANTS

pcc		0,57								
X <sub>d</sub> - dir. axis synchronous		268%	242%	225%	180%		283%	276%	264%	242%
X' <sub>d</sub> - dir. axis transient		21,1%	19,0%	17,7%	14,1%		22,2%	21,7%	20,7%	19,0%
X'' <sub>d</sub> - dir. axis subtransient		10,0%	9,0%	8,4%	6,7%		10,5%	10,3%	9,8%	9,0%
X <sub>q</sub> - quad. axis reactance		147%	133%	124%	99%		156%	152%	145%	133%
T' <sub>do</sub> - O.C. field time constant							103ms			
T' <sub>d</sub> - Transient time constant							7ms			
T'' <sub>d</sub> - Sub-transient time constant							5ms			

### MECHANICAL DATA

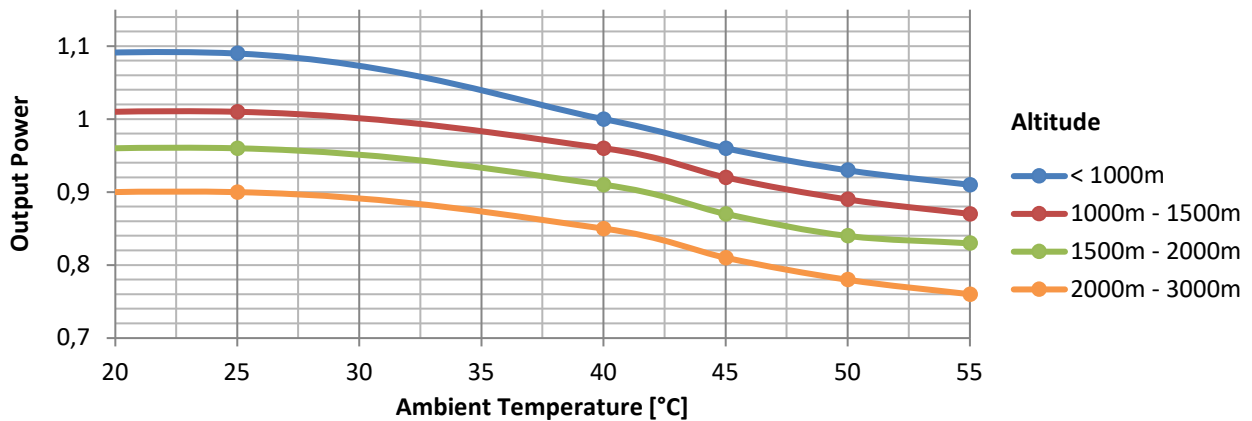
Bearing non drive end				6307-2RS-C3
Bearing drive end (B3/B14 form)				6309-2RS-C3
Weight of generator	in B2	kg		121
	in B3/B14	kg		123
	in B3/B9	kg		\

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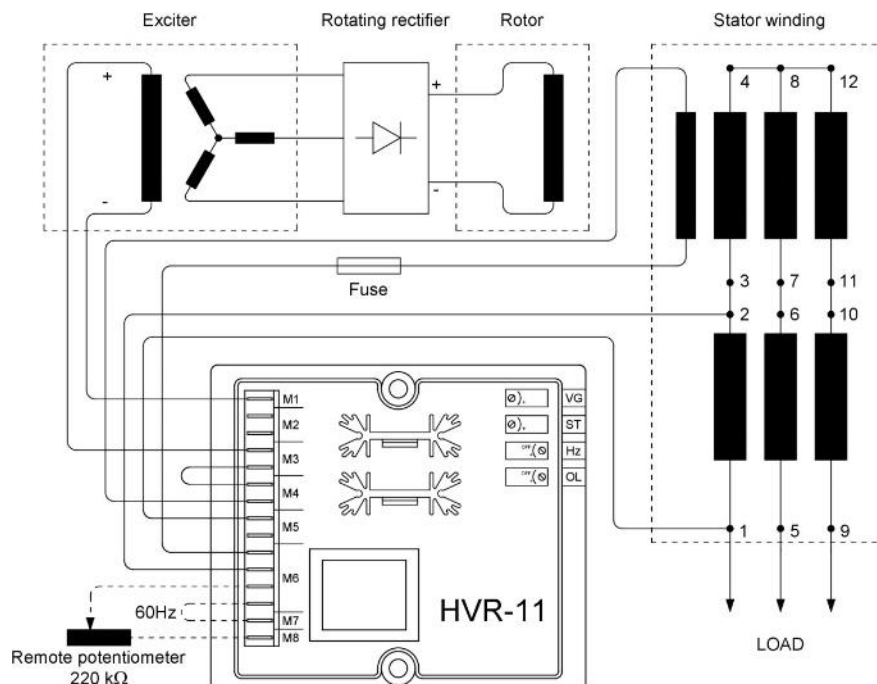
## MOMENT OF INERZIA

B3/B9	kg·m <sup>2</sup>	\
SAE 7½	kg·m <sup>2</sup>	0,212
SAE 8	kg·m <sup>2</sup>	0,221
SAE 10	kg·m <sup>2</sup>	0,238
SAE 11½	kg·m <sup>2</sup>	0,257
SAE 14	kg·m <sup>2</sup>	\
SAE 18	kg·m <sup>2</sup>	\
B3/B14	kg·m <sup>2</sup>	0,197

## DERATING CURVES



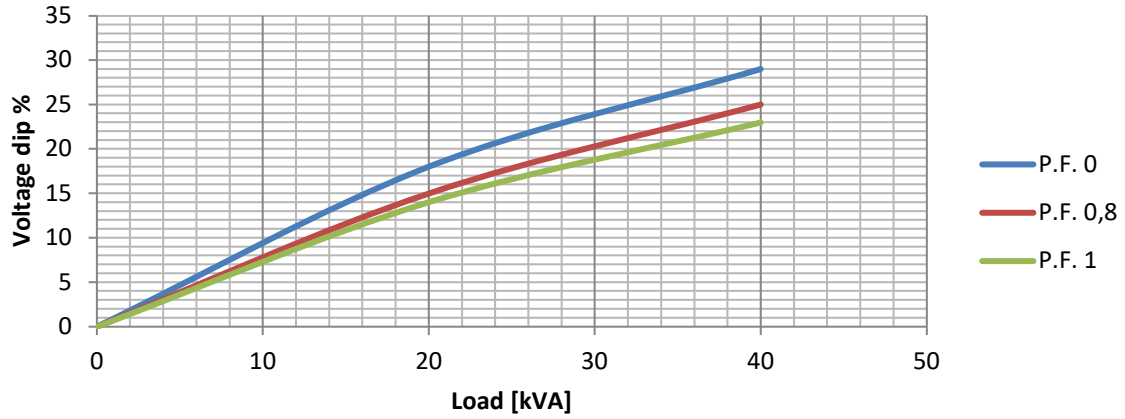
## WIRING DIAGRAM



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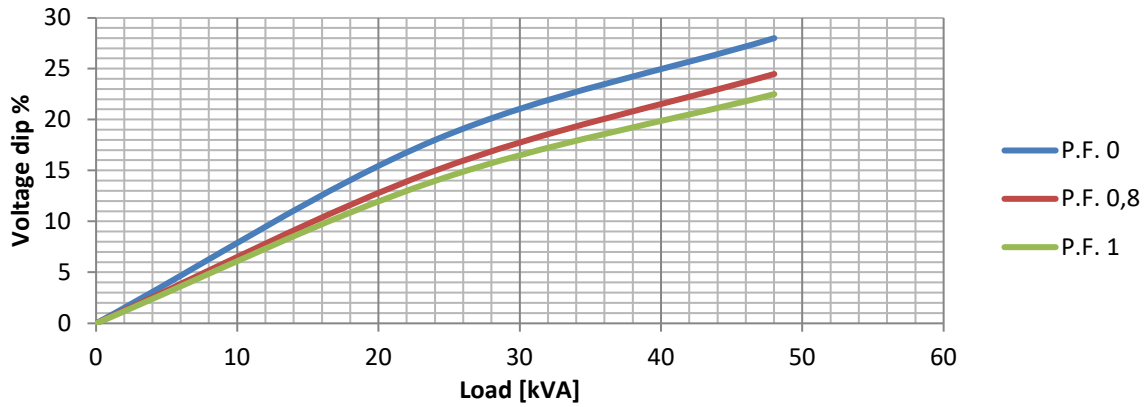
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



## TRANSIENT VOLTAGE VARIATION 60Hz

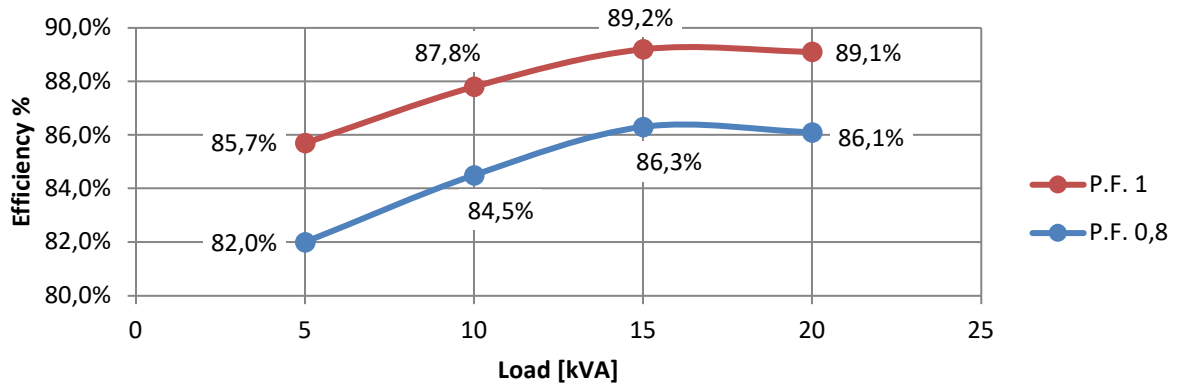
### Transient Voltage Variation @ 60Hz



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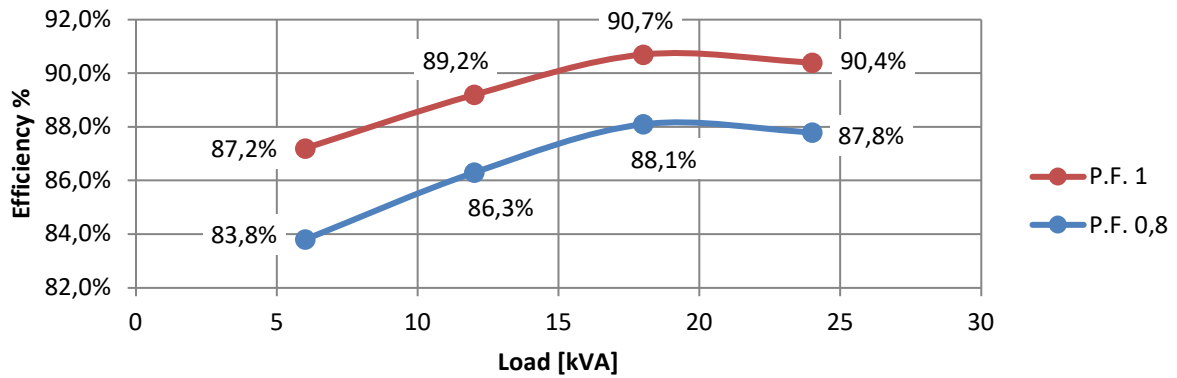
## EFFICIENCY 50Hz

### Efficiency Curves @ 50Hz



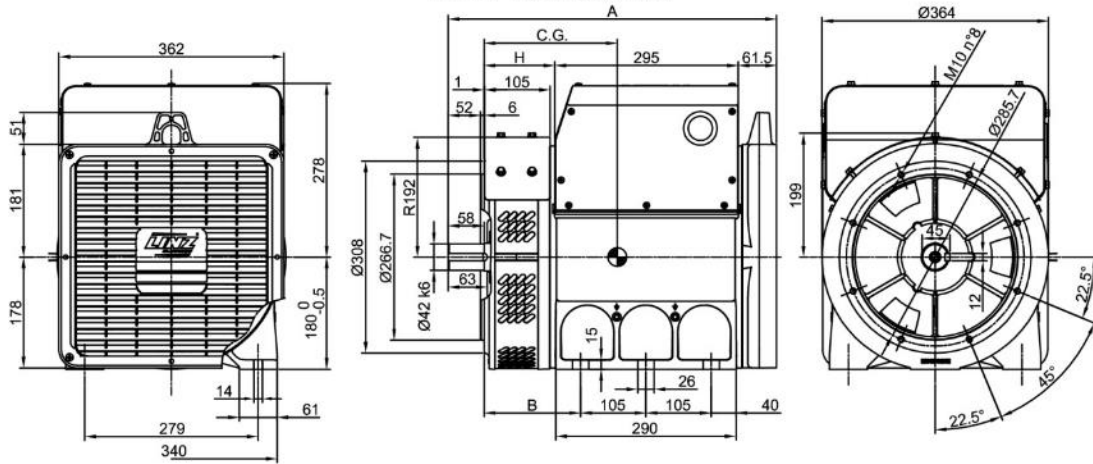
## EFFICIENCY 60Hz

### Efficiency Curves @ 60Hz

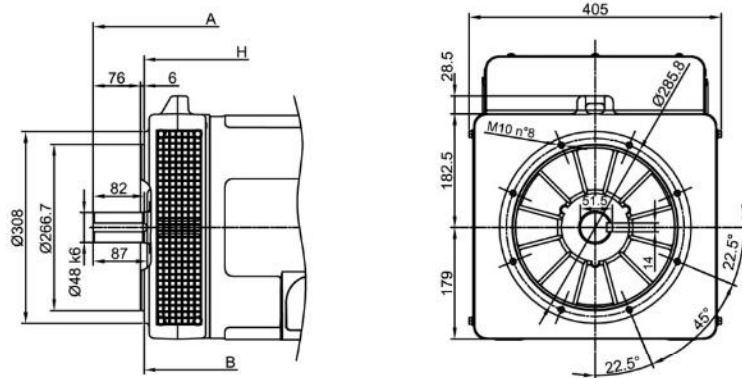


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FORMA - FORM B3/B14 'S-M'



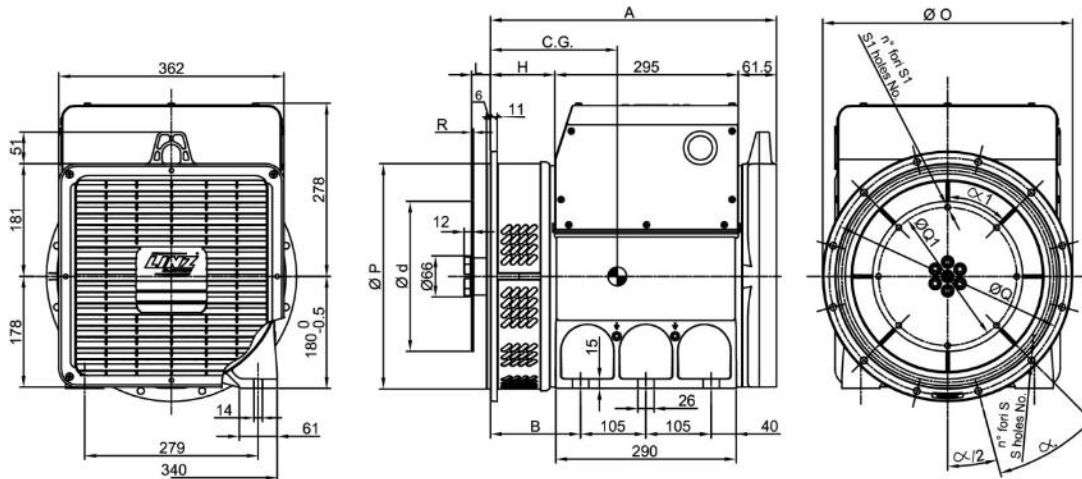
FORMA - FORM B3/B14 'L'



TIPO - TYPE	C.G.
PRO18S A/4 B3/B14	217
PRO18S B/4 B3/B14	221
PRO18S C/4 B3/B14	228
PRO18M D/4 B3/B14	251
PRO18M E/4 B3/B14	262
PRO18L F/4 B3/B14	301
PRO18L G/4 B3/B14	318

TIPO - TYPE	C.G.
PRO18S A/4 SAE	213
PRO18S B/4 SAE	217
PRO18S C/4 SAE	223
PRO18M D/4 SAE	246
PRO18M E/4 SAE	257
PRO18L F/4 SAE	296
PRO18L G/4 SAE	313

FORMA - FORM SAE



FORMA - FORM	A	B	H
B3/B14	PRO 18S	528	113,5
	PRO 18M	598	183,5
	PRO 18L	734	295,5
SAE	PRO 18S	460	103,5
	PRO 18M	530	173,5
	PRO 18L	642	285,5

SAE N.	FLANGIE - FLANGES - BRIDAS						
	Ø O	Ø P	Ø Q	n. fori holes No.	S	α	
5	356	314,3	333,4	8	11	45°	
4	402	362	381	8			
3	451	409,6	428,6	12			30°
2	490	447,7	466,7				

SAE N.	GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS						
	L	Ø d	Ø Q1	n. fori holes No.	S1	α 1	R
6 1/2	30,2	215,9	200	6	9	60°	3
7 1/2		241,3	222,25	8		45°	
8	62	263,52	244,47	6		60°	
10	53,8	314,32	295,27	8	10,5	45°	4,5
11 1/2	39,6	352,42	333,37				