

TECHNICAL DATA SHEET



**ALTERNATOR PRO22S D/4**

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

## PRO22S D/4

### COMMON DATA

Rated Power at 50Hz	kVA	100
Rated Power at 60Hz	kVA	120
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	17,9 at 50Hz      20,8 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	0,02 at 20°C
Rotor Winding Resistance	Ω	3,26 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	A <sub>dc</sub>	0,75
Excitation at full load	A <sub>dc</sub>	2,3

### 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

## PRO22S D/4

### ELECTRICAL DATA

Frequency		50Hz - 1500rpm				60Hz - 1800rpm			
Voltage Series Star	V	<b>380/220</b>	<b>400/230</b>	<b>415/240</b>	<b>440/254</b>	<b>415/240</b>	<b>440/254</b>	<b>460/266</b>	<b>480/277</b>
Rated Power in Class H (125°C/40°C)	kVA	100	100	100	85	110	120	120	120
	kW	80	80	80	68	88	96	96	96
Rated Power in Class F (105°C/40°C)	kVA	93	93	93	80	101	111,5	111,5	111,5
	kW	74,4	74,4	74,4	64	80,8	89,2	89,2	89,2
Rated Power Standby (150°C/40°C)	kVA	110	110	110	93	118	130	130	130
	kW	88	88	88	74,4	94,4	104	104	104
Rated Power Standby (163°C/27°C)	kVA	113	113	113	96	123	135,5	135,5	135,5
	kW	90,4	90,4	90,4	76,8	98,4	108,4	108,4	108,4

### EFFICIENCY IN CL. H

4/4	90,6%							90,9%
3/4	90,9%							91,1%
2/4	88,2%							89,8%
1/4	84,5%							88,0%

### REACTANCES AND TIME CONSTANTS

Pcc		0,47							
X <sub>d</sub> - dir. axis synchronous		330%	298%	277%	209%	365%	355%	324%	298%
X' <sub>d</sub> - dir. axis transient		19,9%	18,0%	16,7%	12,6%	22,1%	21,4%	19,6%	18,0%
X'' <sub>d</sub> - dir. axis subtransient		10,0%	9,0%	8,4%	6,3%	11,0%	10,7%	9,8%	9,0%
X <sub>q</sub> - quad. axis reactance		215%	194%	180%	136%	238%	231%	211%	194%
T' <sub>do</sub> - O.C. field time constant		277ms							
T' <sub>d</sub> - Transient time constant		22ms							
T'' <sub>d</sub> - Sub-transient time constant		11ms							

### MECHANICAL DATA

Bearing non drive end				6309-2RS-C3
Bearing drive end (B3/B14 form)				6314-2RS-C3
Weight of generator	in B2	kg		379
	in B3/B14	kg		381
	in B3/B9	kg		\

## PRO22S D/4

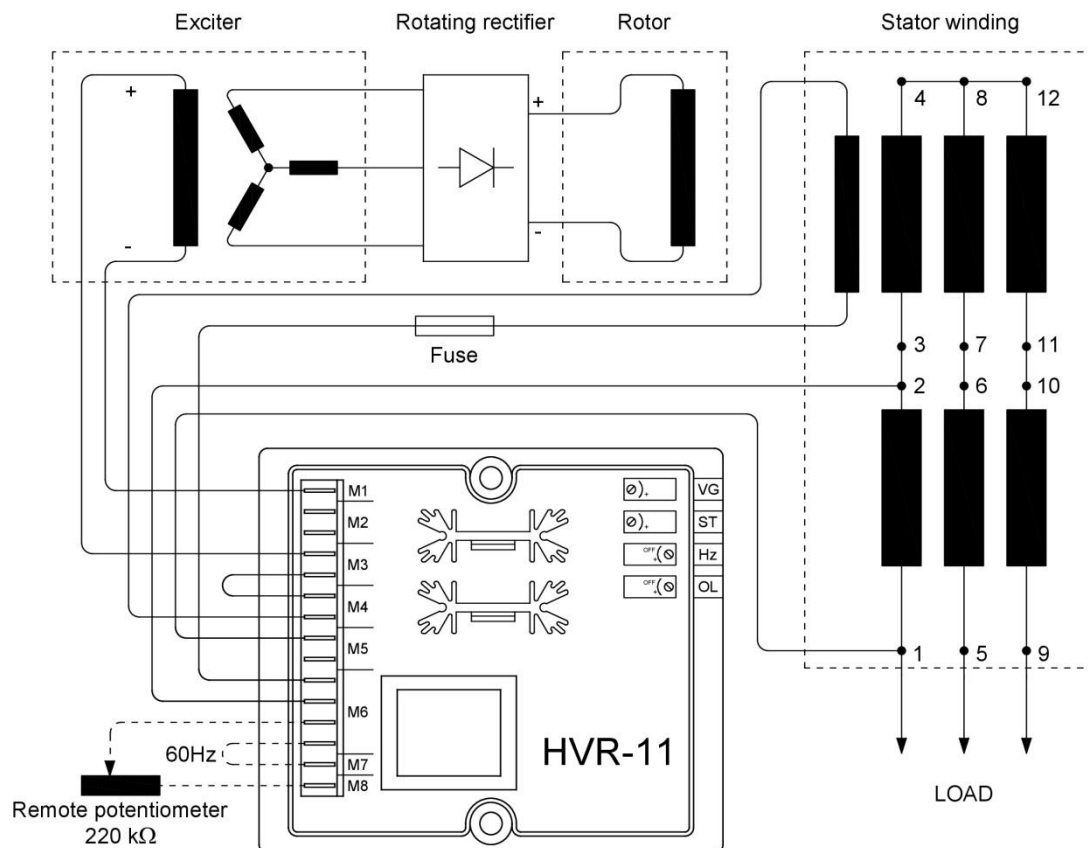
### MOMENT OF INERZIA

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>	1,074
SAE 14	kg·m <sup>2</sup>	1,222
SAE 18	kg·m <sup>2</sup>	\
B3/B14	kg·m <sup>2</sup>	0,996

### POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

Altitude	Ambient temperature				
	25°C	40°C	45°C	50°C	55°C
< 1000m	1,09	1,00	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	0,90	0,85	0,81	0,78	0,76

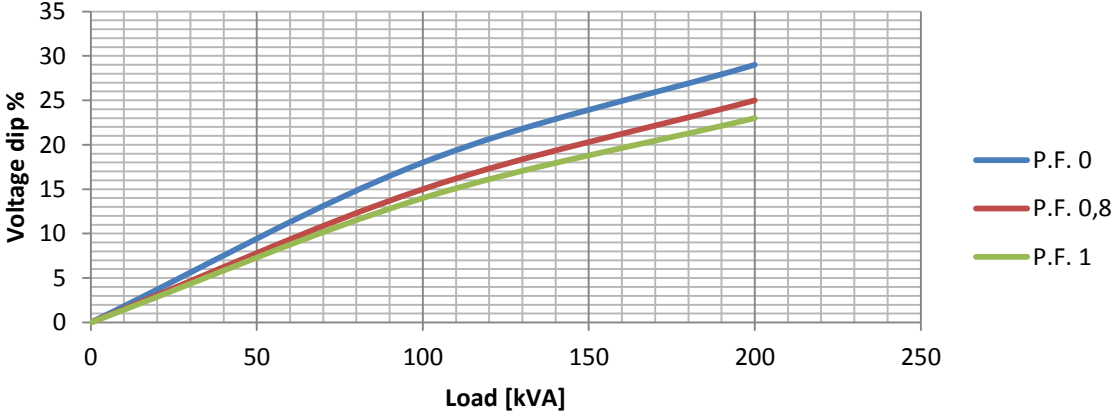
### WIRING DIAGRAM



# PRO22S D/4

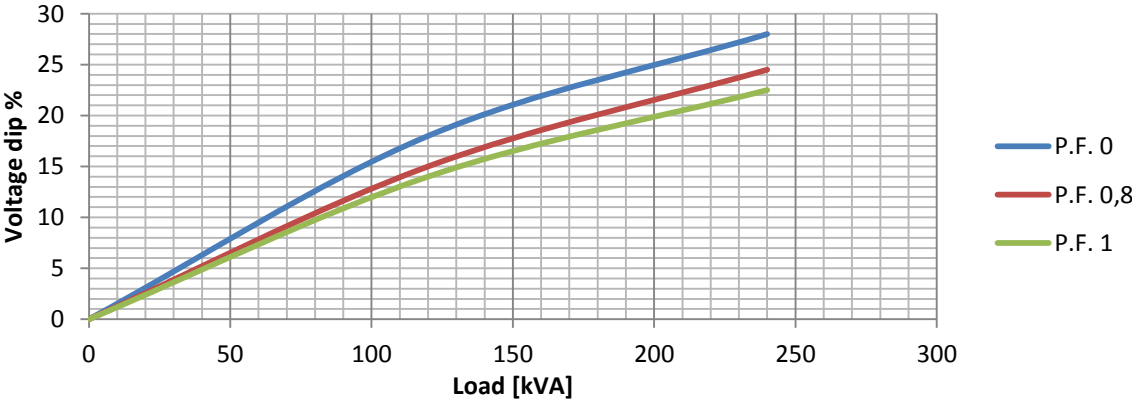
## TRANSIENT VOLTAGE VARIATION 50Hz

### Transient Voltage Variation @ 50Hz



## TRANSIENT VOLTAGE VARIATION 60Hz

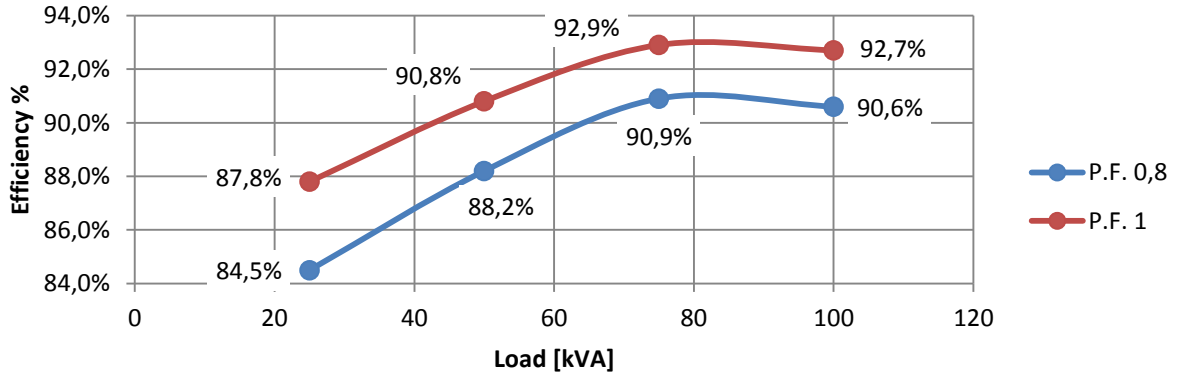
### Transient Voltage Variation @ 60Hz



# PRO22S D/4

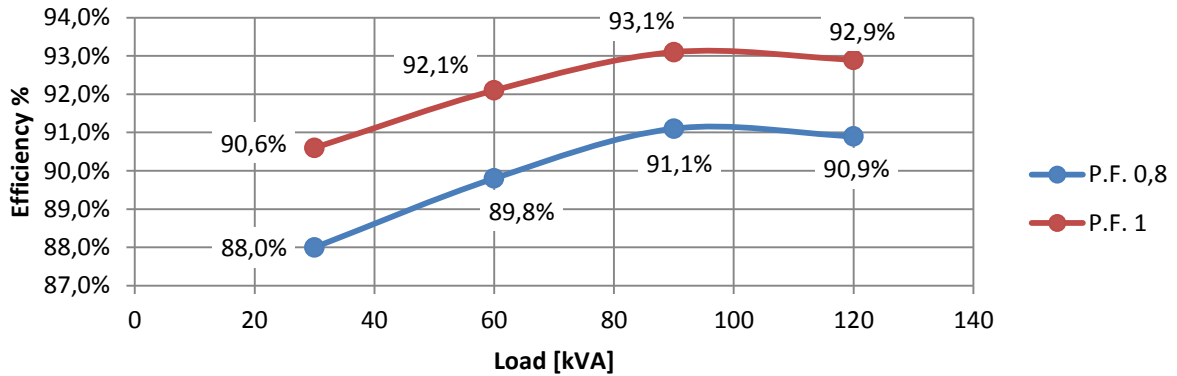
## EFFICIENCY 50Hz

### Three Phase Efficiency Curves @ 50Hz



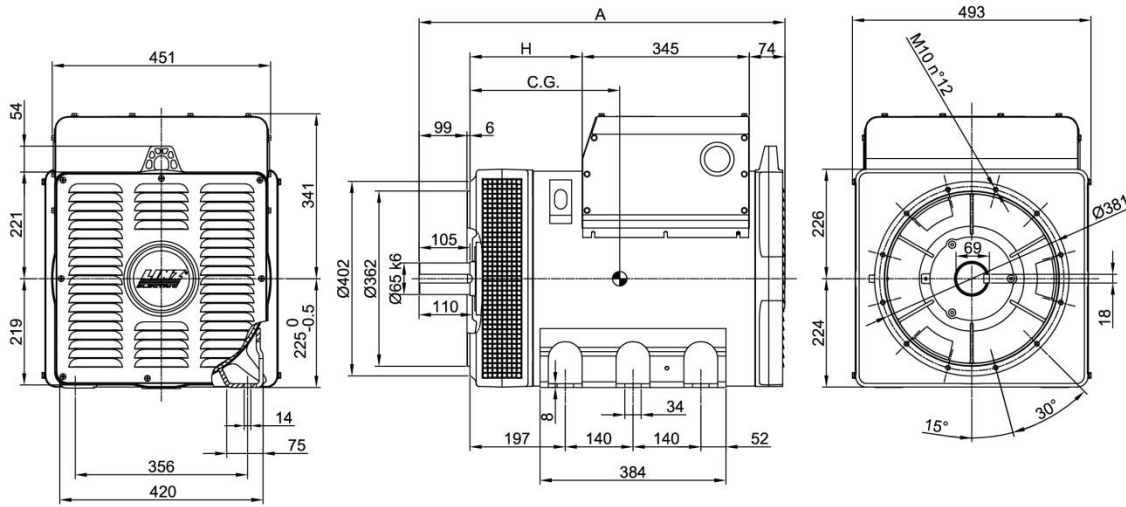
## EFFICIENCY 60Hz

### Three Phase Efficiency Curves @ 60Hz

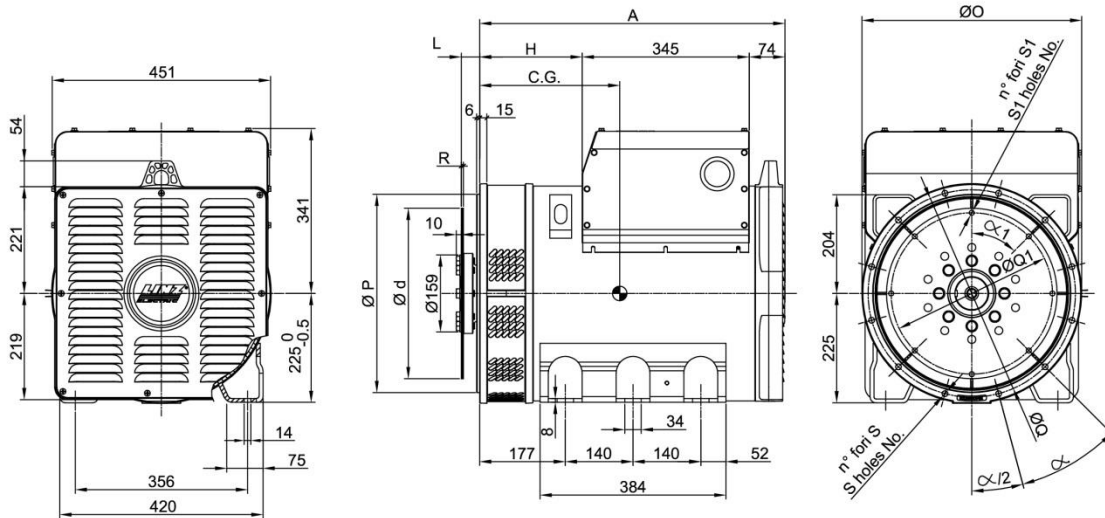


# PRO22S D/4

## 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°	