



## **ALTERNATOR PRO22S D/4**

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

Technical Data Sheet

## 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 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	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	0.02 at 20°C	
Rotor Winding Resistance	3.26 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 <sub>dc</sub>	0.75
Excitation at full load	A <sub>dc</sub>	2.3

### STANDARD

References	EN60034-1 ISO8528-3 EN55011
------------	-----------------------------

## 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

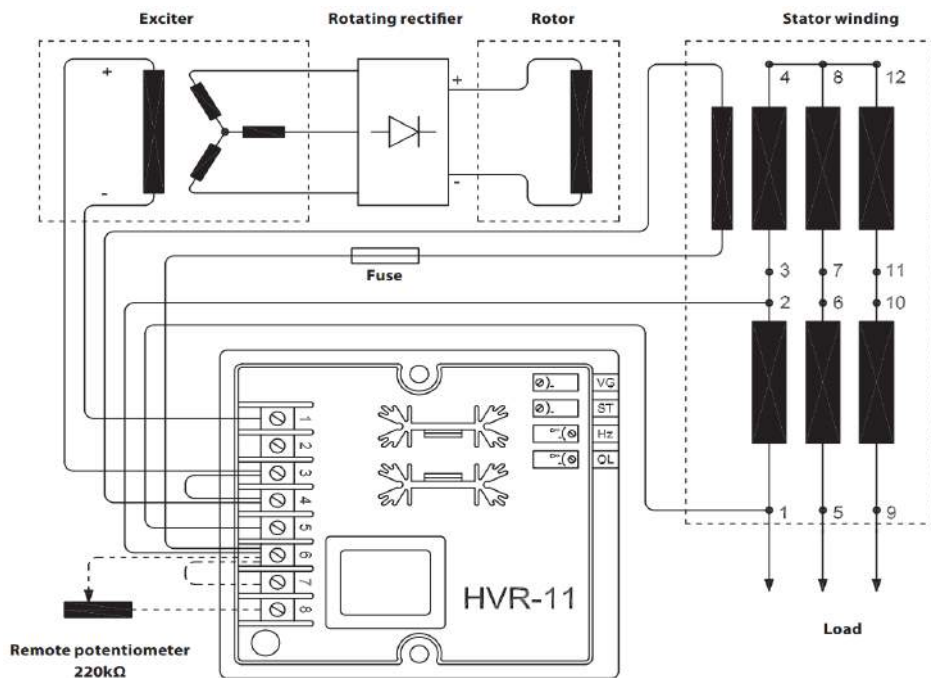
## MOMENT OF INERZIA

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

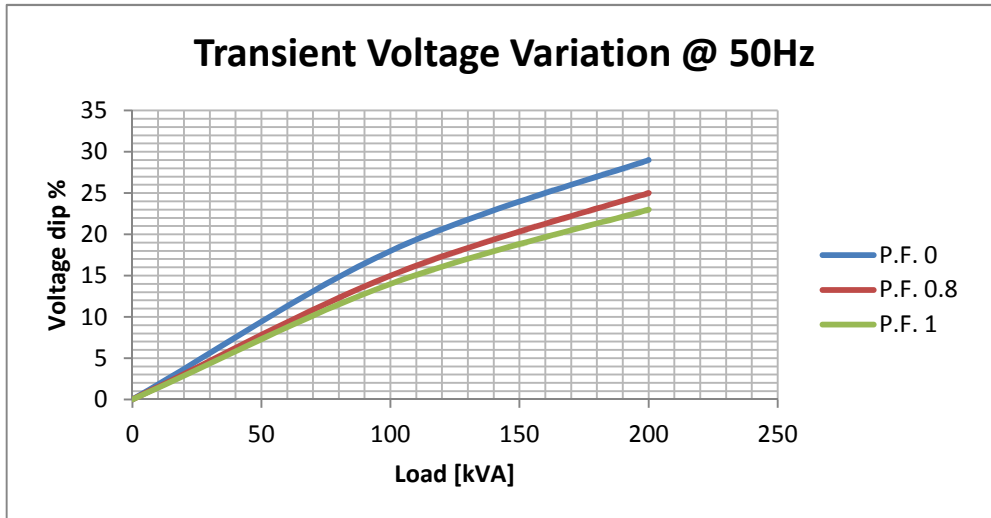
Altitude	Ambient temperature				
	25°C	40°C	45°C	50°C	55°C
< 1000m	1.09	1	0.96	0.93	0.91
1000m - 1500m	1.01	0.96	0.92	0.89	0.87
1500m - 2000m	0.96	0.91	0.87	0.84	0.83
2000m - 3000m	0.9	0.85	0.81	0.78	0.76

## WIRING DIAGRAM

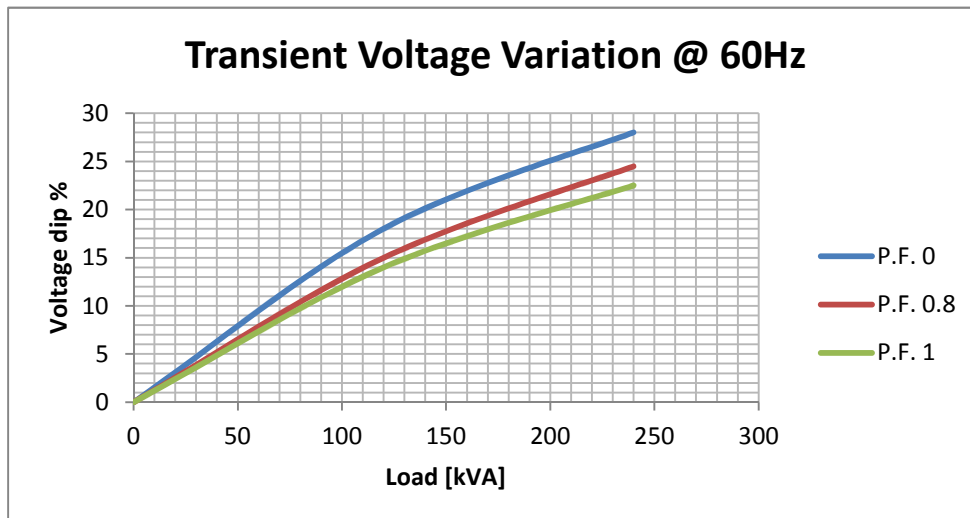


**PRO22S D/4**

**TRANSIENT VOLTAGE VARIATION 50Hz**

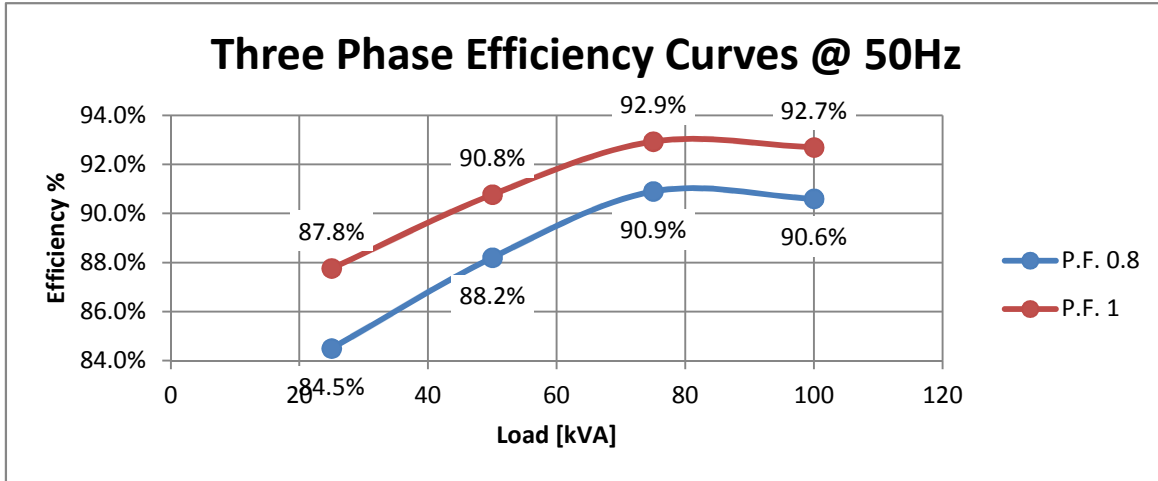


**TRANSIENT VOLTAGE VARIATION 60Hz**

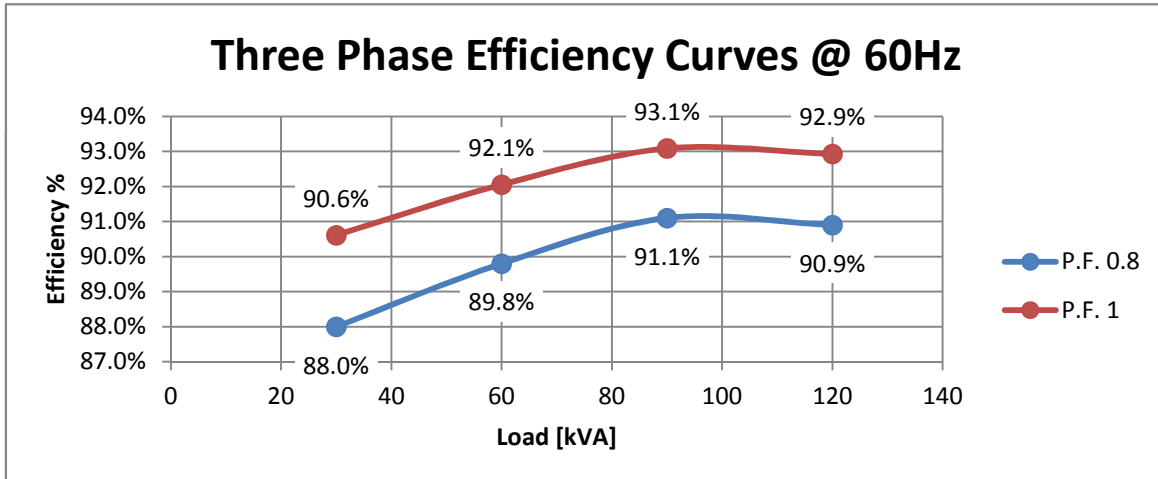


**PRO22S D/4**

**EFFICIENCY 50Hz**

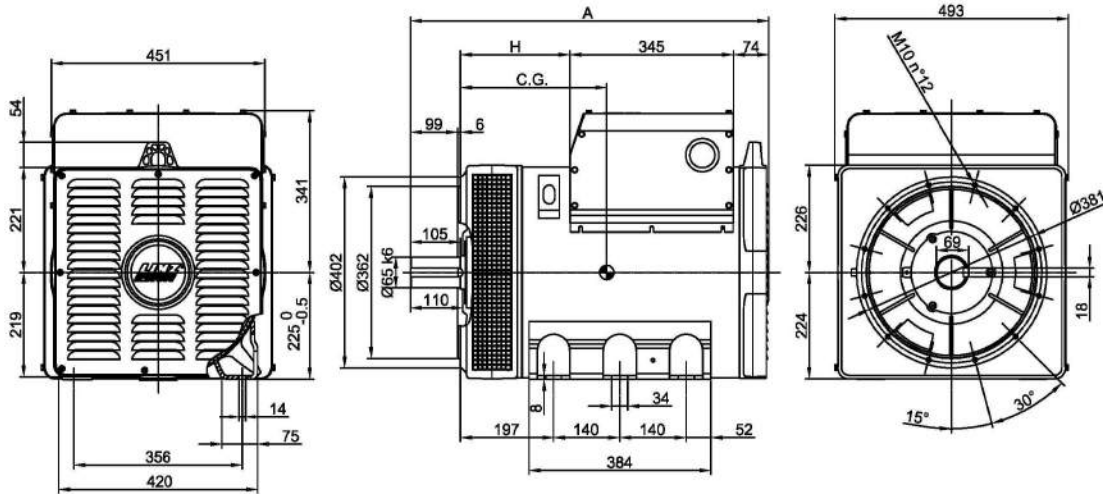


**EFFICIENCY 60Hz**

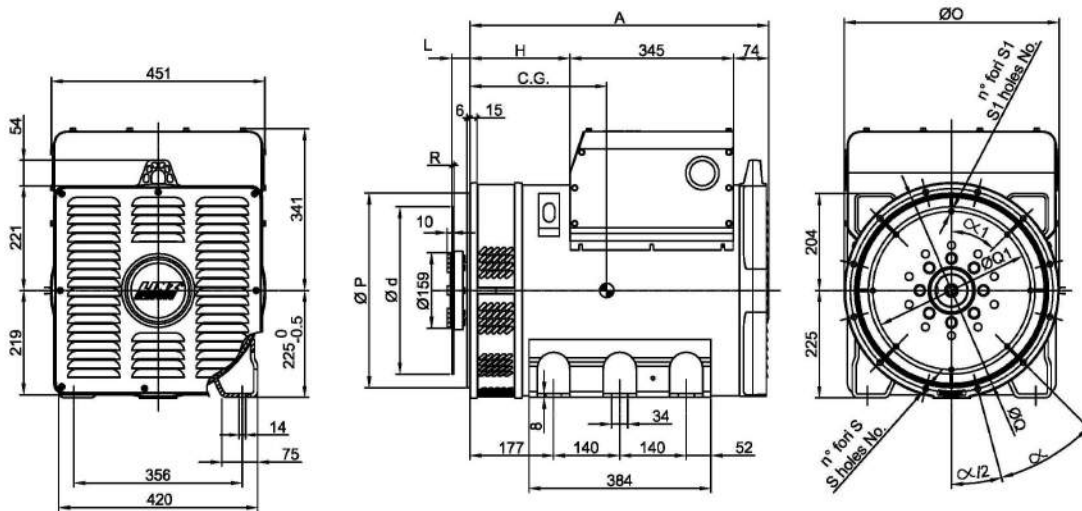


# PRO22S D/4

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°	