



ALTERNATOR PRO28M F/4

three-phase brushless synchronous alternator with AVR - 4 poles

Technical Data Sheet

PRO28M F/4

COMMON DATA

Rated Power at 50Hz	kVA	350
Rated Power at 60Hz	kVA	420
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 ³ /min	39.5 at 50Hz 45 at 60Hz
R.F.I. Suppression		Standard EN55011

REGULATION DATA

AVR	HVR30	\
Sensing	three-phase	\
Voltage Regulation	±1%	
Sustained Short Circuit		> 300% 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		0.004 at 20°C
Rotor Winding Resistance		2.9 at 20°C
Exciter Stator Resistance		15 at 20°C
Exciter Rotor Resistance		0.25 at 20°C
THD at full load		<3%
THD at no load		<3%
Excitation at no load	A _{dc}	0.63
Excitation at full load	A _{dc}	2.2

STANDARD

References	EN60034-1 ISO8528-3 EN55011
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ELECTRICAL DATA

Frequency		50Hz - 1500rpm				60Hz - 1800rpm			
Voltage Series Star	V	380/220	400/230	415/240	440/254	415/240	440/254	460/266	480/277
Rated Power in Class H (125°C/40°C)	kVA	350	350	350	340	390	420	420	420
	kW	280	280	280	272	312	336	336	336
Rated Power in Class F (105°C/40°C)	kVA	300	300	300	290	335	360	360	360
	kW	240	240	240	232	268	288	288	288
Rated Power Standby (150°C/40°C)	kVA	365	365	365	354	400	435	435	435
	kW	292	292	292	283.2	320	348	348	348
Rated Power Standby (163°C/27°C)	kVA	375	375	375	365	415	450	450	450
	kW	300	300	300	292	332	360	360	360

EFFICIENCY IN CL. H

4/4		93.7%						94.0%
3/4		93.9%						94.2%
2/4		93.0%						93.3%
1/4		90.0%						90.6%

REACTANCES AND TIME CONSTANTS

pcc			0.40						
X _d	- dir. axis synchronous	377%	340%	316%	273%	422%	405%	370%	340%
X' _d	- dir. axis transient	19.9%	18.0%	16.7%	14.5%	22.4%	21.4%	19.6%	18.0%
X'' _d	- dir. axis subtransient	9.4%	8.5%	7.9%	6.8%	10.6%	10.1%	9.3%	8.5%
X _q	- quad. axis reactance	235%	212%	197%	170%	263%	252%	231%	212%
T' _{do}	- O.C. field time constant	1870ms							
T' _d	- Transient time constant	115ms							
T'' _d	- Sub-transient time constant	13ms							

MECHANICAL DATA

Bearing non drive end			6314-2RS-C3
Bearing drive end (B3/B14 form)			6316-2RS-C3
Weight of generator	in B2	kg	949
	in B3/B14	kg	960
	in B3/B9	kg	\

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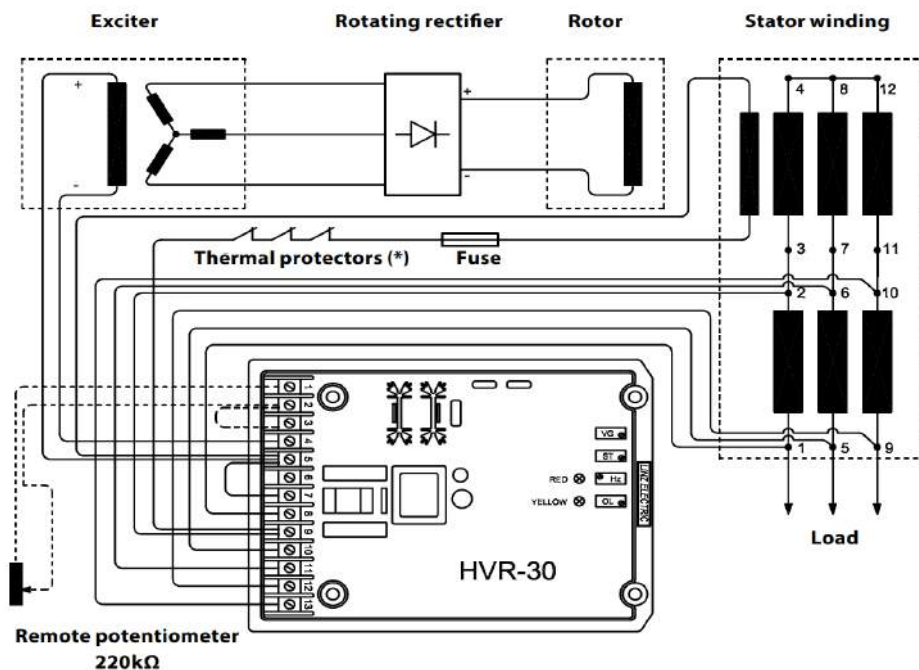
MOMENT OF INERZIA

B3/B9	kg·m ²	\
SAE 7½	kg·m ²	\
SAE 8	kg·m ²	\
SAE 10	kg·m ²	\
SAE 11½	kg·m ²	4.408
SAE 14	kg·m ²	4.524
SAE 18	kg·m ²	\
B3/B14	kg·m ²	4.229

POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

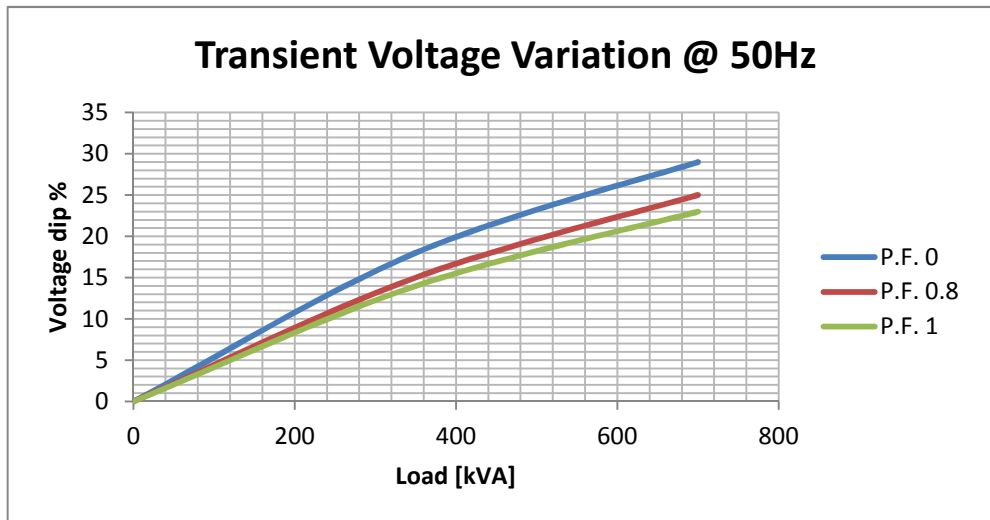
Altitude	Ambient temperature				
	25°C	40°C	45°C	50°C	55°C
< 1000m	1.09	1	0.96	0.93	0.91
1000m - 1500m	1.01	0.96	0.92	0.89	0.87
1500m - 2000m	0.96	0.91	0.87	0.84	0.83
2000m - 3000m	0.9	0.85	0.81	0.78	0.76

WIRING DIAGRAM

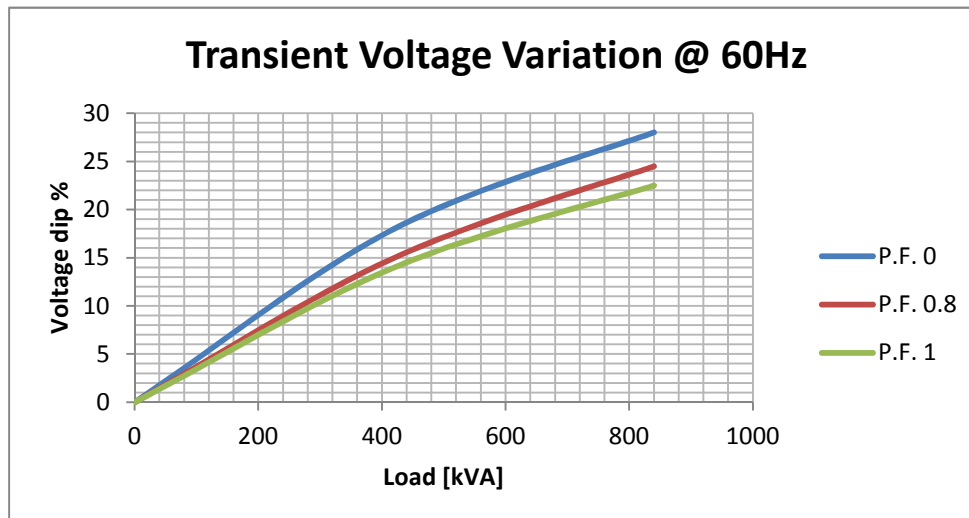


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TRANSIENT VOLTAGE VARIATION 50Hz

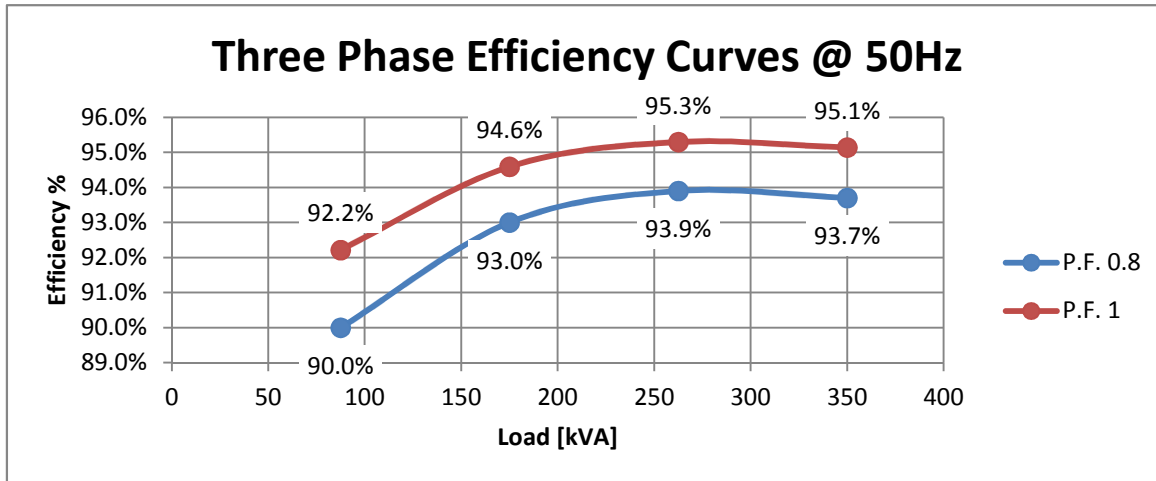


TRANSIENT VOLTAGE VARIATION 60Hz

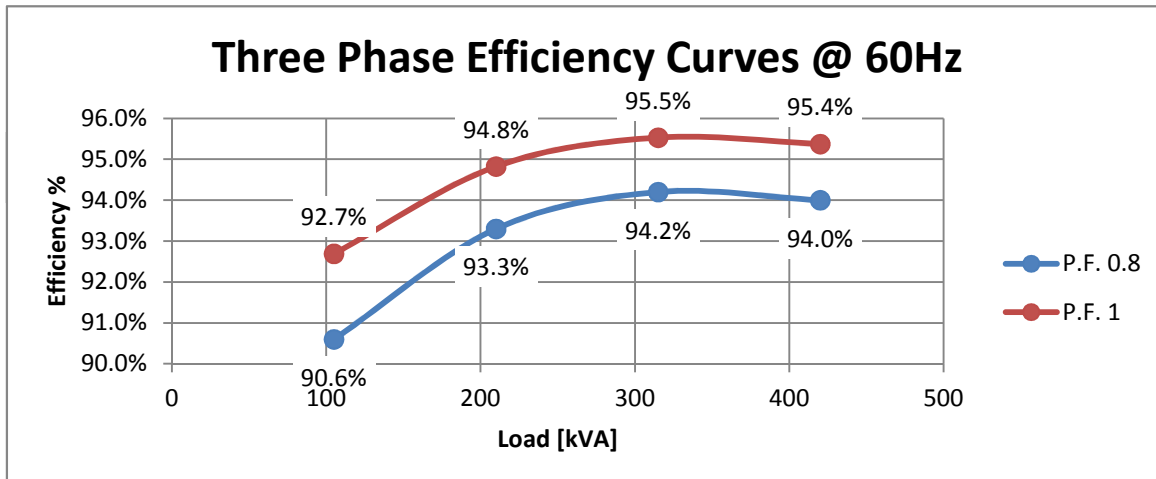


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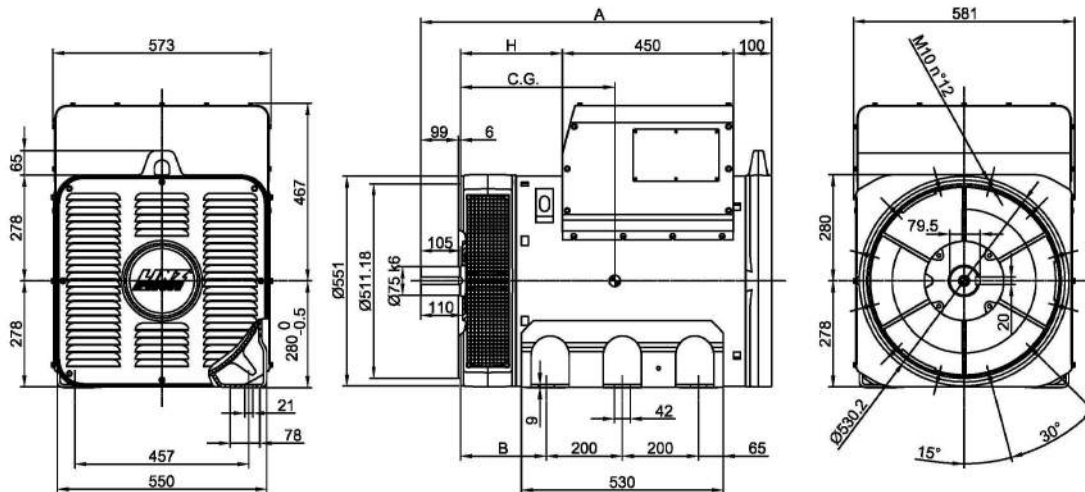
EFFICIENCY 50Hz



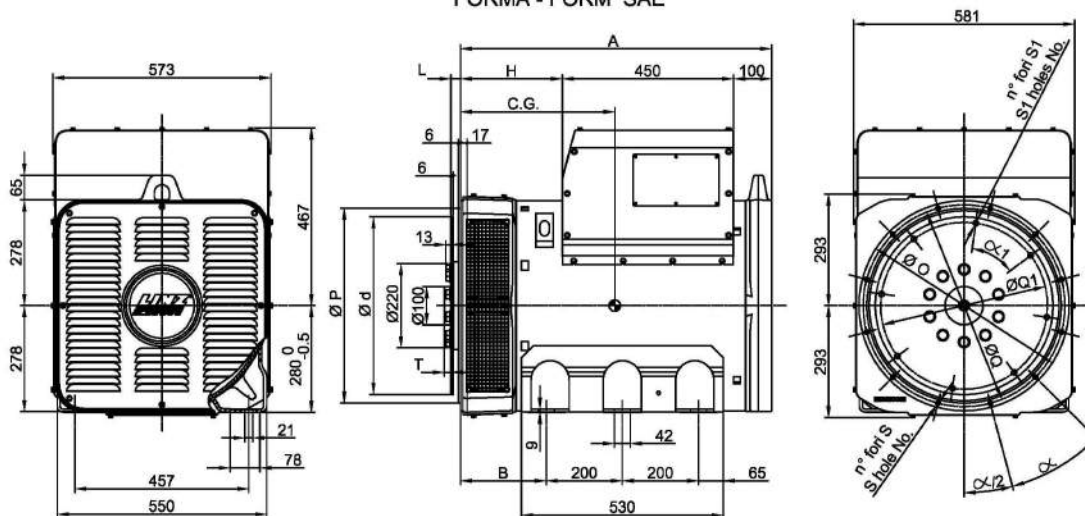
EFFICIENCY 60Hz



FORMA - FORM B3/B14



FORMA - FORM SAE



FORMA - FORM		A	B	H	TIPO - TYPE	C.G.
B3/B14	PRO 28S	922	225	267	PRO28S A/4	376
	PRO 28M	1072		417	PRO28S B/4	380
	PRO 28L	1137	325	482	PRO28S C/4	394
SAE	PRO 28S	817	225	267	PRO28S D/4	406
	PRO 28M	967		417	PRO28M E/4	452
	PRO 28L	1032	325	482	PRO28M F/4	480
					PRO28L G/4	513

SAE N.	FLANGIE - FLANGES - BRIDAS					
	Ø O	Ø P	Ø Q	n. fori holes No.	S	α
3	451	409.6	428.6	12	12	30°
2	490	447.68	466.7			
1	552	511.18	530.2			

SAE N.	GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS						
	L	ϕ d	ϕ Q1	n. fori holes No.	S1	α 1°	T
11 1/2	39.6	352.42	333.37	8	10.5	45°	0
14	25.4	466.72	438.15	8	14	45°	17.3