



## **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 <sup>3</sup> /min	39.5 at 50Hz	45 at 60Hz
Telephone Interference		<2%	
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 Winding		12	
Stator Winding Resistance		0.008Ω at 20°C	
Rotor Winding Resistance		2.9Ω at 20°C	
Exciter Stator Resistance		15Ω at 20°C	
Exciter Rotor Resistance		0.25Ω at 20°C	
THD at full load		<3%	
THD at no load		<3%	
Excitation at no load	A <sub>dc</sub>	0.63	
Excitation at full load	A <sub>dc</sub>	2.2	

### STANDARD

References		EN60034-1, ISO8538, EN55011	
------------	--	-----------------------------	--

## PRO28M F/4

### ELECTRICAL DATA

Frequency		50Hz - 1500rpm				60Hz - 1800rpm			
		380/220	400/230	415/240	440/254	415/240	440/254	460/266	480/277
Voltage Series Star	V	380/220	400/230	415/240	440/254	415/240	440/254	460/266	480/277
Voltage Parallel Star	V	190/110	200/115	207/120	220/127	207/120	220/127	230/133	240/138
Voltage Series Delta	V	220	230	240	254	240	254	266	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 <sub>d</sub> - dir. axis synchronous	377%	340%	316%	273%	422%	405%	370%	340%
X' <sub>d</sub> - dir. axis transient	19.9%	18.0%	16.7%	14.5%	22.4%	21.4%	19.6%	18.0%
X'' <sub>d</sub> - dir. axis subtransient	9.4%	8.5%	7.9%	6.8%	10.6%	10.1%	9.3%	8.5%
X <sub>q</sub> - quad. axis reactance	235%	212%	197%	170%	263%	252%	231%	212%
T' <sub>do</sub> - O.C. field time constant	1870 ms							
T' <sub>d</sub> - Transient time constant	115 ms							
T'' <sub>d</sub> - Sub-transient time constant	13 ms							

### MECHANICAL DATA

Bearing non drive end	6314-2RS-C3		
Bearing drive end (B3/B14 form)	6316-2RS-C3		
Weight of generator	in B2	kg	930
	in B3/B14	kg	935

## PRO28M F/4

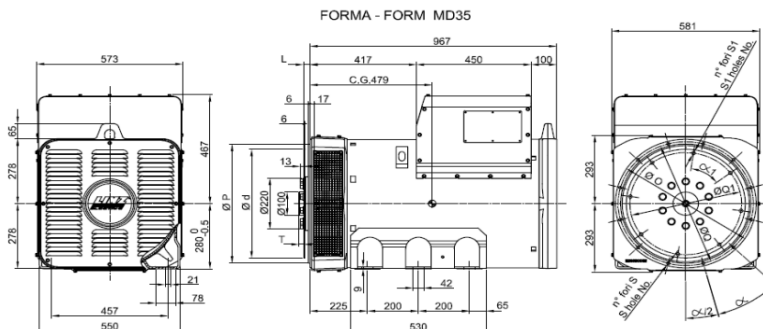
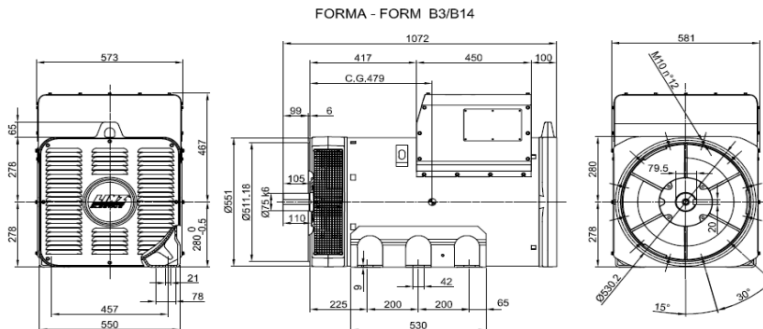
### MOMENT OF INERZIA

SAE 11½	kg·m <sup>2</sup>	3.871
SAE 14	kg·m <sup>2</sup>	4.017
B3/B14	kg·m <sup>2</sup>	3.702

### POWER VARIATION ACCORDING TO TEMPERATURE AND ALTITUDE

Ambient temperature					
Altitude	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

### DIMENSIONS

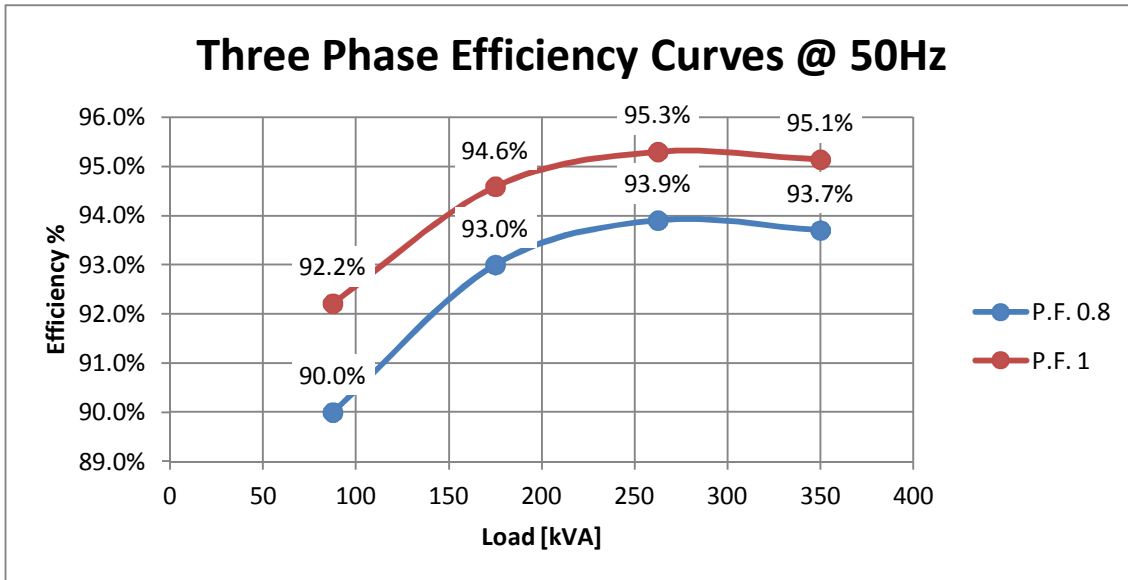


SAE N.	FLANGIE - FLANGES - BRIDAS					
	Ø O	Ø P	Ø Q	n. forf holes No.	S	α
3	451	409.6	428.6			
2	490	447.68	466.7	12	12	30°
1	552	511.18	530.2			

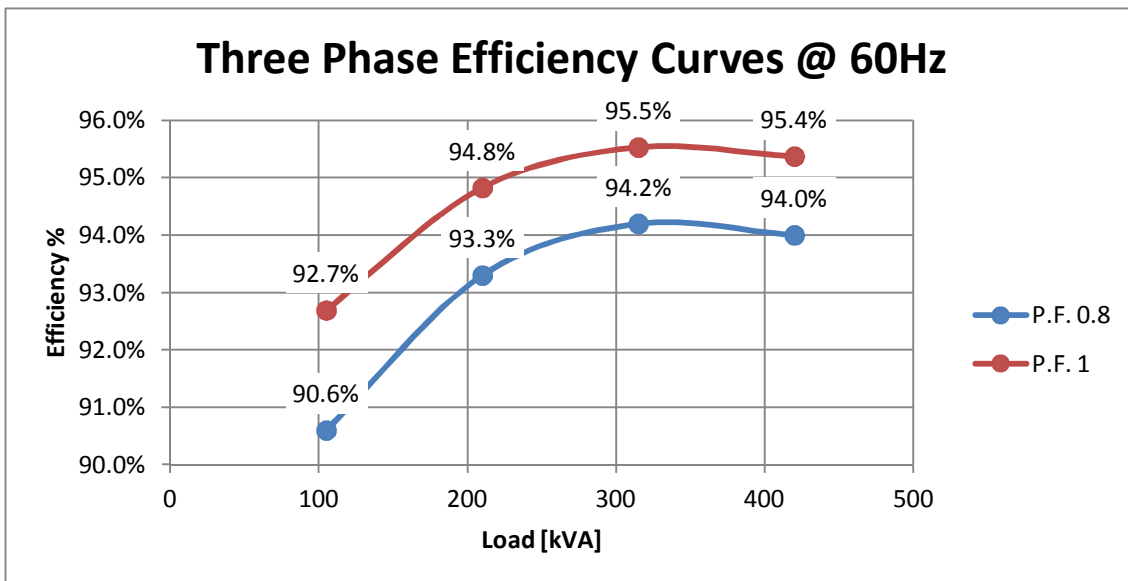
SAE N.	GIUNTI A DISCO - COUPLING DISCS - JUNTAS A DISCOS						
	L	Ø d	Ø Q1	n. forf holes No.	S1	α1	T
1 1/2	39.6	352.42	333.37	8	10.5	45°	0
14	25.4	466.72	438.15	8	14	45°	17.3

**PRO28M F/4**

**EFFICIENCY 50Hz**

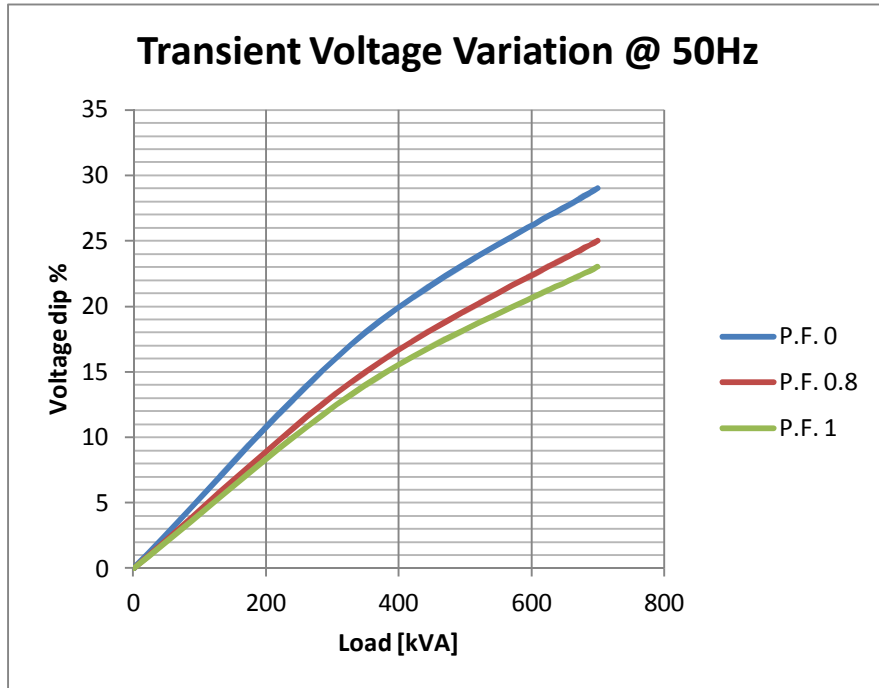


**EFFICIENCY 60Hz**



**PRO28M F/4**

**TRANSIENT VOLTAGE VARIATION 50Hz**



**TRANSIENT VOLTAGE VARIATION 60Hz**

