THREE-PHASE SYNCHRONOUS GENERATOR

TCU428F

Datasheet For 4 Poles - 50Hz @ 1500rpm / 60Hz @ 1800rpm

Ambient Temperature	40 ℃	**Excitation**	Brushless	**Short Circuit Current Capacity (with PMG)**	≥300%
Temperature Rise	125 ℃	**Winding Pitch**	2 / 3	**Method of Cooling**	IC01
Service Duty	Continuous	**Power Factor**	0.8	**Direction of Rotation**	Counter-clockwise
Phase	3	**Insulation Class**	Class H	**Maximum Over-speed**	2250 rpm
Pole	4	**Waveform : TIF**	<50	**Degree of Protection**	IP21
Voltage Regulation	+/- 0.5%	**Waveform : THF**	<2%	**Radio interference**	Class B Group 1
AVR Model	ETC-2	**Altitude**	≤1000 m.a.s.l	**Total Harmonic Content**	< 3% - At no load

Electrical and Mechanical Characteristic

Frequency	**Hz**	**50**			**60**				
Round per minute	**rpm**	**1500**			**1800**				
Voltage (Y Connection) - Series Star	**V**	380	**400**	415	380	416	440	460	480
Voltage (Δ Connection) - Series Delta	**V**	220	**230**	240	220	240	254	266	277
Rated power at Class H (125 °C) temperature rise	**kVA**	1330	**1400**	1350	1330	1450	1540	1610	1680
	kW	1064	**1120**	1080	1064	1160	1232	1288	1344
Efficiency at Class H (P.F.=0.8)	**4/4%**	95.7	**95.8**	95.8	95.5	95.6	95.7	95.9	96
	3/4%	95.9	**96**	96.0	95.7	95.8	95.9	96.1	96.2
	2/4%	95.3	**95.4**	95.4	95.1	95.2	95.3	95.5	95.6
Efficiency at Class H (P.F.=1.0)	**4/4%**	96.4	**96.5**	96.5	96.1	96.2	96.3	96.5	96.6
	3/4%	96.6	**96.7**	96.7	96.3	96.4	96.5	96.7	96.8
	2/4%	96.1	**96.2**	96.2	95.8	95.9	96.0	96.2	96.3
Reactance (%) at Class H									
Short-circuit ratio	**Kcc**	0.3698	**0.3890**	0.4345	0.3082	0.3390	0.3568	0.3728	0.3893
Direct axis synchronous reactance unsaturated	**Xd**	2.7042	**2.5690**	2.3014	3.2448	2.9497	2.8023	2.6826	2.5690
Quadrature axis synchronous reactance unsaturated	**Xq**	1.7768	**1.6880**	1.5122	2.1320	1.9382	1.8413	1.7626	1.6880
Direct axis transient reactance saturated	**X'd**	0.1779	**0.1690**	0.1514	0.2135	0.1940	0.1844	0.1765	0.1690
Direct axis subtransient reactance saturated	**X"d**	0.1263	**0.1200**	0.1075	0.1516	0.1378	0.1309	0.1253	0.1200
Quadrature axis subtransient reactance saturated	**X"q**	0.1526	**0.1450**	0.1299	0.1831	0.1665	0.1582	0.1514	0.1450
Zero sequence reactance unsaturated	**X0**	0.0242	**0.0230**	0.0206	0.0291	0.0264	0.0251	0.0240	0.0230
Leakage reactance	**X_L**	0.0821	**0.0780**	0.0699	0.0985	0.0896	0.0851	0.0814	0.0780
Negative sequence reactance saturated	**X2**	0.1395	**0.1325**	0.1187	0.1674	0.1521	0.1445	0.1384	0.1325

Open circuit time constant (sec.)	**T'do**	2.8480	
Short-circuit transient time constant (sec.)	**T'd**	0.1260	
Subtransient time constant (sec.)	**T"d**	0.0114	
Armature time constant (sec.)	**Tα**	0.0353	
No load excitation current	**io(A)**	0.6	0.6
Full load excitation current	**ic(A)**	2.3	2.2
Full load excitation voltage	**uc(V)**	57	54
Stator Winding Resistance (20°C)	**ohm**	0.001603	
Rotor Winding Resistance (20°C)	**ohm**	1.921	
Exciter Stator Resistance (20°C)	**ohm**	21.06	
Exciter Rotor Phase resistance	**ohm**	0.0439	
Cooling air requirement	**m^3/sec**	1.82	2.18

Configuration	**Single Bearing**	**Double Bearing**
Type of Construction	**B2 - SAE**	**IM B34**
Inertia (J) [kgm2]	27.5	27.4
Total Weight	2480	2516
Drive end bearing / Lubrication	Not supply	6228 C3-2Z / Prelubricated - sealed for life
Non-drive end bearing / Lubrication	6321 C3-2Z / Prelubricated - sealed for life	
Recovery time - sec.	0.5	
Stator winding	DOUBLE LAYER CONCENTRIC	
Number of Terminal	12	
Rotor	with damping cage	
Overload	110% rated load for 1 hour	

STANDARD COMPLIANCE - IEC 60034-1; CEI 2-3; BS 4999-5000; VDE 0530; NF 51-100,111; OVE M-10, NEMA MG 1.22.