



THREE-PHASE SYNCHRONOUS GENERATOR

TCU368D

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

Ambient Temperature	40 °C	Excitation	Brushless	Short Circuit Current Capacity (with PMG)	≥300%
Temperature Rise	125 °C	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				
		1500			1800				
Round per minute	rpm								
Voltage (Y Connection) - Series Star	V	380	400	415	380	416	440	460	480
Voltage (YY Connection) - Parallel Star	V	190	200	208	190	208	220	230	240
Voltage (Δ Connection) - Series Delta	V	220	230	240	220	240	254	266	277
Voltage (ΔΔ Connection) - Parallel Delta	V	110	115	120	110	120	127	133	138
Rated power at Class H (125 °C) temperature rise	kVA	590	625	600	590	650	687.5	719	750
	kW	472	500	480	472	520	550	575	600
Efficiency at Class H (P.F.=0.8)	4/4%	94.5	94.6	94.6	94.3	94.4	94.5	94.7	94.9
	3/4%	94.7	94.8	94.8	94.5	94.6	94.7	94.9	95.1
	2/4%	94.3	94.4	94.4	94	94.1	94.2	94.4	94.6
Efficiency at Class H (P.F.=1.0)	4/4%	95.5	95.6	95.6	95.3	95.4	95.5	95.7	95.9
	3/4%	95.7	95.8	95.8	95.6	95.7	95.8	96.0	96.2
	2/4%	95.3	95.4	95.4	95.2	95.3	95.4	95.6	95.8

Reactance (%) at Class H

	Kcc	0.3739	0.3910	0.4385	0.3116	0.3392	0.3585	0.3745	0.3911
Short-circuit ratio									
Direct axis synchronous reactance unsaturated	X _d	2.6746	2.5570	2.2805	3.2092	2.9481	2.7893	2.6700	2.5570
Quadrature axis synchronous reactance unsaturated	X _q	1.5146	1.4480	1.2914	1.8173	1.6695	1.5795	1.5120	1.4480
Direct axis transient reactance saturated	X' _d	0.1841	0.1760	0.1570	0.2209	0.2029	0.1920	0.1838	0.1760
Direct axis subtransient reactance saturated	X'' _d	0.1454	0.1390	0.1240	0.1745	0.1603	0.1516	0.1451	0.1390
Quadrature axis subtransient reactance saturated	X'' _q	0.1684	0.1610	0.1436	0.2021	0.1856	0.1756	0.1681	0.1610
Zero sequence reactance unsaturated	X ₀	0.0251	0.0240	0.0214	0.0301	0.0277	0.0262	0.0251	0.0240
Leakage reactance	X _L	0.0994	0.0950	0.0847	0.1192	0.1095	0.1036	0.0992	0.0950
Negative sequence reactance saturated	X ₂	0.1569	0.1500	0.1338	0.1883	0.1729	0.1636	0.1566	0.1500

Open circuit time constant (sec.)	T' _{do}	2.1170							
Short-circuit transient time constant (sec.)	T' _d	0.0990							
Subtransient time constant (sec.)	T'' _d	0.0140							
Armature time constant (sec.)	T _α	0.0259							
No load excitation current	io(A)	0.6			0.6				
Full load excitation current	ic(A)	2			1.9				
Full load excitation voltage	uc(V)	51			48				
Stator Winding Resistance (20°C)	ohm	0.004551							
Rotor Winding Resistance (20°C)	ohm	1.354							
Exciter Stator Resistance (20°C)	ohm	18.54							
Exciter Rotor Phase resistance	ohm	0.0375							
Cooling air requirement	m ³ /sec	1.105			1.326				

Configuration	Single Bearing	Double Bearing
Type of Construction	B2 - SAE	IM B34
Inertia (J) [kgm ²]	10.87	10.76
Total Weight	1417	1443
Drive end bearing / Lubrication	Not supply	6222 C3-2Z / Prelubricated - sealed for life
Non-drive end bearing / Lubrication	6316 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.

Data and Technical Specification are subject to change in order to update or improve the products, without prior notice