



THREE-PHASE SYNCHRONOUS GENERATOR

TCU368B

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-1	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	535	562.5	540	535	585	620	645	675
	kW	428	450	432	428	468	496	516	540
Efficiency at Class H (P.F.=0.8)	4/4%	94.3	94.4	94.4	94.1	94.2	94.3	94.4	94.5
	3/4%	94.5	94.6	94.6	94.3	94.4	94.5	94.6	94.7
	2/4%	94.1	94.2	94.2	93.8	93.9	94.0	94.1	94.2
Efficiency at Class H (P.F.=1.0)	4/4%	95.5	95.6	95.6	95.3	95.4	95.5	95.6	95.7
	3/4%	95.7	95.8	95.8	95.6	95.7	95.8	95.9	96
	2/4%	95.3	95.4	95.4	95.2	95.3	95.4	95.5	95.6

Reactance (%) at Class H

	Kcc	0.3100	0.3300	0.3660	0.2580	0.2830	0.2980	0.3130	0.3300
Short-circuit ratio									
Direct axis synchronous reactance unsaturated	X _d	3.2311	3.0660	2.7344	3.8770	3.5350	3.3512	3.1923	3.0660
Quadrature axis synchronous reactance unsaturated	X _q	1.7526	1.6630	1.4832	2.1029	1.9174	1.8177	1.7315	1.6630
Direct axis transient reactance saturated	X' _d	0.2293	0.2176	0.1941	0.2752	0.2509	0.2378	0.2266	0.2176
Direct axis subtransient reactance saturated	X'' _d	0.1844	0.1750	0.1561	0.2213	0.2018	0.1913	0.1822	0.1750
Quadrature axis subtransient reactance saturated	X'' _q	0.2178	0.2067	0.1843	0.2614	0.2383	0.2259	0.2152	0.2067
Zero sequence reactance unsaturated	X ₀	0.0311	0.0295	0.0263	0.0373	0.0340	0.0322	0.0307	0.0295
Leakage reactance	X _L	0.1314	0.1247	0.1112	0.1577	0.1438	0.1363	0.1298	0.1247
Negative sequence reactance saturated	X ₂	0.2011	0.1908	0.1702	0.2413	0.2200	0.2086	0.1987	0.1908

Open circuit time constant (sec.)	T' _{do}	1.9700							
Short-circuit transient time constant (sec.)	T' _d	0.0990							
Subtransient time constant (sec.)	T'' _d	0.0125							
Armature time constant (sec.)	T _α	0.0243							
No load excitation current	io(A)	0.5			0.5				
Full load excitation current	ic(A)	1.8			1.7				
Full load excitation voltage	uc(V)	50			46				
Stator Winding Resistance (20°C)	ohm	0.0066							
Rotor Winding Resistance (20°C)	ohm	1.164							
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]	9.14	9.03
Total Weight	1250	1276
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