



THREE-PHASE SYNCHRONOUS GENERATOR

TCU318C

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	381.5	402.5	387.5	381.5	415	440	462.5	481.5
	kW	305	322	310	305	332	352	370	385
Efficiency at Class H (P.F.=0.8)	4/4%	94.0	94.1	94.2	93.9	94.0	94.1	94.3	94.5
	3/4%	94.2	94.3	94.4	94.1	94.2	94.3	94.5	94.7
	2/4%	93.5	93.6	93.7	93.3	93.4	93.5	93.7	93.9
Efficiency at Class H (P.F.=1.0)	4/4%	95.1	95.2	95.3	94.9	95.0	95.1	95.3	95.5
	3/4%	95.3	95.4	95.5	95.1	95.2	95.3	95.5	95.7
	2/4%	94.7	94.8	94.9	94.4	94.5	94.6	94.8	95

Reactance (%) at Class H

	Kcc	0.3225	0.3620	0.3785	0.2688	0.2962	0.3123	0.3245	0.3398
Short-circuit ratio	Kcc	0.3225	0.3620	0.3785	0.2688	0.2962	0.3123	0.3245	0.3398
Direct axis synchronous reactance unsaturated	X _d	3.1003	2.7590	2.6420	3.7201	3.3766	3.2023	3.0821	2.9433
Quadrature axis synchronous reactance unsaturated	X _q	1.9238	1.9970	1.6394	2.3084	2.0952	1.9871	1.9125	1.8264
Direct axis transient reactance saturated	X' _d	0.1963	0.2020	0.1673	0.2355	0.2137	0.2027	0.1951	0.1863
Direct axis subtransient reactance saturated	X'' _d	0.1553	0.1610	0.1324	0.1864	0.1692	0.1604	0.1544	0.1475
Quadrature axis subtransient reactance saturated	X'' _q	0.1889	0.1960	0.1610	0.2267	0.2057	0.1951	0.1878	0.1793
Zero sequence reactance unsaturated	X ₀	0.0325	0.0340	0.0277	0.0390	0.0354	0.0336	0.0323	0.0309
Leakage reactance	X _L	0.1050	0.1090	0.0894	0.1259	0.1143	0.1084	0.1043	0.0996
Negative sequence reactance saturated	X ₂	0.1721	0.1790	0.1467	0.2065	0.1875	0.1778	0.1711	0.1634

Open circuit time constant (sec.)	T' _{do}	2.1160							
Short-circuit transient time constant (sec.)	T' _d	0.0940							
Subtransient time constant (sec.)	T'' _d	0.0119							
Armature time constant (sec.)	T _α	0.0311							
No load excitation current	io(A)	0.5			0.5				
Full load excitation current	ic(A)	1.9			1.8				
Full load excitation voltage	uc(V)	47			45				
Stator Winding Resistance (20°C)	ohm	0.008525							
Rotor Winding Resistance (20°C)	ohm	1.056							
Exciter Stator Resistance (20°C)	ohm	16.32							
Exciter Rotor Phase resistance	ohm	0.0374							
Cooling air requirement	m ³ /sec	0.672			0.806				

Configuration	Single Bearing	Double Bearing
Type of Construction	B2 - SAE	IM B34
Inertia (J) [kgm ²]	5.66	5.55
Total Weight	1005	1024
Drive end bearing / Lubrication	Not supply	6319 C3-2Z / Prelubricated - sealed for life
Non-drive end bearing / Lubrication	6314 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