



THREE-PHASE SYNCHRONOUS GENERATOR

TCU318B

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	360.0	381	365	360	395	420	437.5	456
	kW	288	305	292	288	316	336	350	365
Efficiency at Class H (P.F.=0.8)	4/4%	93.8	93.9	93.9	93.6	93.7	93.8	94.0	94.2
	3/4%	94.0	94.1	94.1	93.8	93.9	94.0	94.2	94.4
	2/4%	93.3	93.4	93.4	93.0	93.1	93.2	93.4	93.6
Efficiency at Class H (P.F.=1.0)	4/4%	94.9	95	95.0	94.7	94.8	94.9	95.1	95.3
	3/4%	95.1	95.2	95.2	95.0	95.1	95.2	95.4	95.6
	2/4%	94.5	94.6	94.6	94.2	94.3	94.4	94.6	94.8

Reactance (%) at Class H

	Kcc	0.3210	0.3360	0.3780	0.2680	0.2930	0.3080	0.3230	0.3370
Short-circuit ratio									
Direct axis synchronous reactance unsaturated	X _d	3.1137	2.9760	2.6469	3.7361	3.4182	3.2511	3.1009	2.9679
Quadrature axis synchronous reactance unsaturated	X _q	2.2704	2.1700	1.9300	2.7243	2.4925	2.3706	2.2611	2.1641
Direct axis transient reactance saturated	X' _d	0.2406	0.2300	0.2046	0.2887	0.2642	0.2513	0.2397	0.2294
Direct axis subtransient reactance saturated	X'' _d	0.1967	0.1880	0.1672	0.2360	0.2159	0.2054	0.1959	0.1875
Quadrature axis subtransient reactance saturated	X'' _q	0.2333	0.2230	0.1983	0.2800	0.2561	0.2436	0.2324	0.2224
Zero sequence reactance unsaturated	X ₀	0.0398	0.0380	0.0338	0.0477	0.0436	0.0415	0.0396	0.0379
Leakage reactance	X _L	0.1548	0.1480	0.1316	0.1858	0.1700	0.1617	0.1542	0.1476
Negative sequence reactance saturated	X ₂	0.2155	0.2060	0.1832	0.2586	0.2366	0.2250	0.2146	0.2054

Open circuit time constant (sec.)	T' _{do}	1.9400							
Short-circuit transient time constant (sec.)	T' _d	0.0920							
Subtransient time constant (sec.)	T'' _d	0.0110							
Armature time constant (sec.)	T _α	0.0309							
No load excitation current	io(A)	0.5			0.5				
Full load excitation current	ic(A)	2			1.9				
Full load excitation voltage	uc(V)	50			48				
Stator Winding Resistance (20°C)	ohm	0.009825							
Rotor Winding Resistance (20°C)	ohm	0.943							
Exciter Stator Resistance (20°C)	ohm	16.32							
Exciter Rotor Phase resistance	ohm	0.0374							
Cooling air requirement	m ³ /sec	0.642			0.77				

Configuration	Single Bearing	Double Bearing
Type of Construction	B2 - SAE	IM B34
Inertia (J) [kgm ²]	5.06	4.96
Total Weight	919	938
Drive end bearing / Lubrication	Not supply	6319 C3-2Z / Pre-lubricated - sealed for life
Non-drive end bearing / Lubrication	6314 C3-2Z / Pre-lubricated - 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