



# THREE-PHASE SYNCHRONOUS GENERATOR

**UNA477-F**

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

Ambient Temperature	40°C	Excitation	Brushless	Short Circuit Current Capacity (with AUX OR PMG)	≥300%
Temperature Rise	125K	Winding Pitch	2 / 3	Method of Cooling	IC01
Service Duty	Continuous	Power Factor	0.8	Direction of Rotation (viewing from Drive End)	CW
Phase	3	Insulation Class	Class H	Maximum Over-speed	2250 rpm
Pole	4	Waveform : TIF	<50	Degree of Protection	IP23
Voltage Regulation Accuracy	+/- 0.5%	Waveform : THF	<2%	Radio interference	Class B Group 1
AVR Model	ETC-02	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 (125K) temperature rise	kVA	665	700	675	665	725	770	800	840
	kW	532	560	540	532	580	616	640	672
Efficiency at Class H (P.F.=0.8)	100%	94.8	94.9	94.9	94.7	94.8	94.9	95.1	95.2
	75%	95.0	95.1	95.1	94.9	95.0	95.1	95.3	95.4
	50%	94.6	94.7	94.7	94.4	94.5	94.6	94.8	94.9
Efficiency at Class H (P.F.=1.0)	100%	95.8	95.9	95.9	95.7	95.8	95.9	96.1	96.2
	75%	96.0	96.1	96.1	95.9	96.0	96.1	96.3	96.4
	50%	95.6	95.7	95.7	95.4	95.5	95.6	95.8	95.9
Short-circuit ratio	Kcc	0.3450	0.3630	0.4050	0.2870	0.3200	0.3330	0.3500	0.3630
Direct axis synchronous reactance unsaturated	Xd	2.9011	2.7560	2.4689	3.4810	3.1645	3.0063	2.8600	2.7560
Quadrature axis synchronous reactance unsaturated	Xq	1.4889	1.4145	1.2672	1.7866	1.6241	1.5430	1.4679	1.4145
Direct axis transient reactance saturated	X'd	0.1724	0.1638	0.1467	0.2069	0.1881	0.1787	0.1700	0.1638
Direct axis subtransient reactance saturated	X''d	0.1354	0.1286	0.1152	0.1624	0.1477	0.1403	0.1335	0.1286
Quadrature axis subtransient reactance saturated	X''q	0.1681	0.1597	0.1431	0.2017	0.1834	0.1742	0.1657	0.1597
Zero sequence reactance unsaturated	X0	0.0240	0.0228	0.0204	0.0288	0.0262	0.0249	0.0237	0.0228
Leakage reactance	X <sub>L</sub>	0.0916	0.0870	0.0779	0.1099	0.0999	0.0949	0.0903	0.0870
Negative sequence reactance saturated	X2	0.1517	0.1441	0.1291	0.1820	0.1655	0.1572	0.1495	0.1441
Open circuit time constant (sec.)	T'do	2.2164							
Short-circuit transient time constant (sec.)	T'd	0.0990							
Subtransient time constant (sec.)	T''d	0.0148							
Armature time constant (sec.)	Tα	0.0273							
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)	50			48				
Stator Winding Resistance (20°C)	ohm	0.003717							
Rotor Winding Resistance (20°C)	ohm	1.424							
Exciter Stator Resistance (20°C)	ohm	18.54							
Exciter Rotor Phase resistance	ohm	0.0375							
Cooling air requirement	m <sup>3</sup> /sec	1.105			1.326				
Configuration		Single Bearing				Double Bearing			
Type of Construction		B2 - SAE				IM B34			
Inertia (J) [kgm <sup>2</sup> ]		11.54				11.43			
Total Weight		1552				1584			
Drive end bearing / Lubrication		Not supply				6322 C3-2Z / Prelubricated - sealed for life			
Non-drive end bearing / Lubrication		6316 C3-2Z / Prelubricated - sealed for life							
Voltage Recovery Time - sec.		1.0							
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