

DATA SHEET

Synchronous Alternator



Customer		Notes:
Customer reference		
Product line	: GTA251AIHD	Product code : 14419825
Area classification	: Safe	1010318487

General data		Degree of protection	: IP23
Frame (IEC)	: 250	Mounting style	: B35T
Insulation Class	: 180°C (H)	Number of poles	: 4
Total Harmonic Distortion (no load)	: ≤ 3%	Type of Pole	: Salient
Stator winding pitch	: 2/3	Nominal rotation - 50 Hz	: 1500 rpm
Altitude	: up to 1000 m.a.s.l	Nominal rotation - 60 Hz	: 1800 rpm
Number of Leads	: 12	Overspeed	: 2250 rpm
Power factor	: 0.8 to 1.0	Alternator mass	: 461 kg
Excitation system	: Brushless with Auxiliary Coil	Overload	: 1.1x In per 1h each 6h
Cooling	: IC01	Momentary Overload	: 1.5x In per 30s

Frequency and number of phases		50 Hz				60 Hz													
		3ph			1ph	3ph			1ph										
Voltages (V)	Y connection	380	400	415	-	380	416	440	480	-									
	YY connection	190	200	208	-	190	208	220	240	-									
	Δ connection	220	230	239	-	220	240	254	277	-									
	ΔΔ connection	110	115	120	-	110	120	127	138	-									
	Zig-zag or single phase delta	-	-	-	190 - 200	-	-	-	-	220 - 240									
Output power (kVA)	ΔT=80°C (Ta=40°C)	110.0	110.0	104.0	61.6	110.0	125.0	137.0	140.0	76.8									
	ΔT=105°C (Ta=40°C)	126.0	126.0	120.0	70.6	127.0	144.0	157	161	88.0									
	ΔT=125°C (Ta=40°C)	140.0	140.0	133.0	77.0	142.0	159	171	175	96.0									
	ΔT=150°C (Ta=40°C)	145.0	145.0	138.0	84.3	149.0	169	183	188	105.2									
	ΔT=163°C (Ta=27°C)	150.0	150.0	142.0	87.9	156	176	190	189	109.6									
Electrical data (FP=0.8 / ΔT=125°C / Ta=40°C)	Xd(%) Dir. axis synchronous reactance	402.21	363.48	345.31	536.28	486.95	455.2	439.3	378.62	585.72									
	X'd(%) Dir. axis transient reactance	25.24	22.79	21.65	33.65	30.71	28.6	27.6	23.74	36.79									
	X''d(%) Dir. axis subtrans. reactance	17.23	15.55	14.77	22.97	20.96	19.5	18.8	16.2	25.12									
	Xq(%) Quad. axis sync. reactance	155.57	140.58	133.55	207.43	188.34	207.2	169.9	146.44	226.53									
	X''q(%) Quad. axis subtrans. react.	19.16	17.29	16.43	25.55	23.31	35.7	20.9	18.01	27.92									
	X2(%) Negative sequence reactance	18.14	16.37	15.56	24.19	22.07	27.6	19.8	17.06	26.45									
	X0(%) Zero sequence reactance	2.87	2.59	2.46	3.83	3.49	3.2	3.1	2.7	4.19									
	T'd(ms) Short Circ. Trans. time const.	59.5	59.5	59.5	79.33	59.5	96.2	59.5	59.5	79.33									
	T'd(ms) Short Circ. Sub. time const.	1.7	1.7	1.7	2.27	1.7	2.5	1.7	1.7	2.27									
	T'do(ms) Open Circ. time const Trans	980.7	982.0	982.0	1307.6	975.6	1919	980	982.0	1306.4									
	T''do(ms) Open Circ. time const Subt	2.4	2.4	2.4	3.2	2.4	3.5	2.4	2.4	3.2									
	Ta(ms) Armature time const.	8.29	8.29	8.29	11.05	8.29	16	8	8.29	11.05									
	uc(V) Full load excitation voltage	53.82	54.7	54.7	53.82	47.09	52.9	52.2	53.71	52.19									
	ic(A) Full load excitation current	4.42	4.49	4.49	4.42	3.87	4.3	4.3	4.41	4.29									
ic(A) No load excitation current	0.6	0.8	0.8	0.8	0.3	0.5	0.5	0.7	0.67										
Icc(A) Sustained Short-Circ. Current	638.12	606.22	554.04	577.5	647.24	642	673	631.48	600.0										
Kcc Short-circuit ratio	0.28	0.33	0.29	0.37	0.21	0.23	0.25	0.31	0.33										
Efficiency (%)	Power factor	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0		
	25% of load	89.8	92.2	89.6	92.1	89.9	92.4	82.6	84.9	90.6	92.8	90.8	93	91	93.2	90.8	93.1	83.7	85.8
	50% of load	90.1	92.7	90.3	92.9	90.6	93.1	82.9	85.3	90.7	93	91	93.3	91.2	93.5	91.5	93.8	83.9	86.1
	75% of load	88.7	91.7	89.1	92.1	89.4	92.4	81.6	84.4	89.2	91.8	89.6	92.2	89.9	92.5	90.4	93.1	82.7	85.1
	100% of load	86.9	90.3	87.5	90.9	87.8	91.2	80	83.1	87.4	90.2	87.9	90.8	88.2	91.2	89	92	81.1	83.9
	125% of load	85	88.8	85.7	89.6	86	89.9	78.2	81.7	85.4	88.7	86	89.4	86.4	89.7	87.4	90.8	79.5	82.5

Other characteristics		Automatic voltage regulator		According to:
Air flow	: 1.2 m³/s	Accuracy (stability)	: +/- 0.5%	IEC 60034
Exciter stator winding resistance at 20°C	: 12.17 ohm	Rated current	: 5 A	NBR 5117
Stator winding resistance at 20°C	: 0.05089 ohm	Analog input	: Yes	NEMA MG1
Rotor winding resistance	: 0.91 ohm	Digital input	: No	VDE530
Stator winding layers	: 2	Peak current	: 7 A/10 s	ISO 8528
Inertia WR²	: 1.04 kgm²	Droop / TC	: Yes	CSA
NDE Bearing	: 6214-2RS	Dynamic recovery	: 8 to 500 ms	
DE bearing	: 6318-2RSC3	U/F	: Yes	
Flange	: SAE 2	Internal voltage adjustment	: +/- 15%	
Coupling disc	: WITHOUT	External voltage adjustment	: +/- 10%	
		Transient recovery time for ΔU=20%	: 500 ms	

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