

# DATA SHEET

## Synchronous Alternator



Customer	:	Notes:
Customer reference	:	
Product line	: GTA161AIHJ	Product code : 14419469
Area classification	: Safe	1010293511

<b>General data</b>		Degree of protection	: IP23
Frame (IEC)	: 160	Mounting style	: B15T
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	: 145 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	-	380	416	440	480	-								
	YY connection	190	200	-	190	208	220	240	-								
	Δ connection	220	230	-	220	240	254	277	-								
	ΔΔ connection	110	115	-	110	120	127	138	-								
	Zig-zag or single phase delta	-	-	-	190 - 200	-	-	-	-	220 - 240							
Output power (kVA)	ΔT=80°C (Ta=40°C)	16.0	16.0	10.0	17.7	19.1	20.1	21.8	12.0								
	ΔT=105°C (Ta=40°C)	18.0	18.0	11.5	20.3	21.9	23.0	25.0	13.5								
	<b>ΔT=125°C (Ta=40°C)</b>	<b>23.0</b>	<b>23.0</b>	<b>12.7</b>	<b>23.0</b>	<b>25.3</b>	<b>27.0</b>	<b>27.3</b>	<b>15.0</b>								
	ΔT=150°C (Ta=40°C)	23.5	23.5	13.5	25.0	26.8	28.0	30.0	16.0								
	ΔT=163°C (Ta=27°C)	24.0	24.0	14.0	26.0	27.8	29.0	31.1	17.0								
Electrical data (FP=0.8 / ΔT=125°C / Ta=40°C)	Xd(%) Dir. axis synchronous reactance	201.28	181.94	268.37	240.04	221.44	211.24	179.97	281.65								
	X'd(%) Dir. axis transient reactance	13.63	12.31	18.17	16.33	15.01	14.32	12.17	19.09								
	X''d(%) Dir. axis subtrans. reactance	10.27	9.28	13.69	12.3	11.31	10.79	9.18	14.39								
	Xq(%) Quad. axis sync. reactance	82.59	74.66	110.12	98.48	85.82	86.68	73.85	115.57								
	X''q(%) Quad. axis subtrans. react.	10.24	9.24	13.65	12.27	18.76	10.76	9.14	14.35								
	X2(%) Negative sequence reactance	10.25	9.26	13.67	12.28	15.04	10.77	9.16	14.37								
	X0(%) Zero sequence reactance	1.71	1.55	2.28	2.05	1.89	1.8	1.53	2.4								
	T'd(ms) Short Circ.Trans.time const.	35.8	35.8	47.73	35.7	39.34	35.8	35.8	47.73								
	T''d(ms) Short Circ. Sub. time const.	0.5	0.5	0.67	0.5	0.52	0.5	0.5	0.67								
	T''do(ms) Open Circ. time const Trans	536.3	537.1	715.07	533.1	562.16	535.7	537.1	714.27								
	T''do(ms) Open Circ. time const Subt	0.6	0.6	0.8	0.6	0.71	0.6	0.6	0.8								
	Ta(ms) Armature time const.	3.16	3.16	4.21	3.15	3.56	3.16	3.16	4.21								
	uc(V) Full load excitation voltage	25.66	25.88	25.66	29.34	29.19	31.85	32.35	31.85								
	ic(A) Full load excitation current	2.73	2.75	2.73	3.12	3.11	3.39	3.44	3.39								
ic(A) No load excitation current	0.9	1.1	1.2	0.5	0.84	0.8	1.0	1.07									
Icc(A) Sustained Short-Circ. Current	104.83	99.59	95.25	104.83	100.85	106.28	98.51	93.84									
Kcc Short-circuit ratio	0.51	0.58	0.69	0.41	0.45	0.48	0.59	0.65									
Efficiency (%)	Power factor	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0								
	25% of load	81.2	85.1	81	84.9	74.7	78.3	82.1	85.8	82.6	86.2	83.2	86.8	83	86.5	76.5	79.8
	50% of load	84.5	88	84.7	88.2	77.7	81	85.2	88.5	85.8	89	86.3	89.4	86.6	89.8	79.4	82.3
	75% of load	83.8	87.5	84.3	88	77.1	80.5	84.4	87.8	85.1	88.5	85.6	89	86.4	89.7	78.8	81.8
	100% of load	82.1	86.1	82.9	86.8	75.5	79.2	82.7	86.4	83.6	87.2	84.1	87.7	85.3	88.8	77.4	80.7
	125% of load	80.1	84.5	81.1	85.4	73.7	77.7	80.7	84.6	81.7	85.6	82.3	86.2	83.8	87.5	75.7	79.3

<b>Other characteristics</b>		<b>Automatic voltage regulator</b>		<b>According to:</b>	
Air flow	: 0.3 m³/s	Accuracy (stability)	: +/- 0.5%	IEC 60034	
Exciter stator winding resistance at 20°C	: 9.4 ohm	Rated current	: 5 A	NBR 5117	
Stator winding resistance at 20°C	: 0.45939 ohm	Analog input	: Yes	NEMA MG1	
Rotor winding resistance	: 1.85 ohm	Digital input	: No	VDE530	
Stator winding layers	: 2	Peak current	: 7 A/10 s	ISO 8528	
Inertia WR²	: 0.22 kgm²	Droop / TC	: No	CSA	
NDE Bearing	: 6209-2RS	Dynamic recovery	: 8 to 500 ms		
DE bearing		U/F	: Yes		
Flange	: SAE 4	Internal voltage adjustment	: +/- 15%		
Coupling disc	: SAE 7,5	External voltage adjustment	: +/- 10%		
		Transient recovery time for ΔU=20%	: 500 ms		

Rev.	Changes Summary				Performed				Checked				Date			
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