

DATA SHEET

Synchronous Alternator



Customer		Notes:
Customer reference		
Product line	: AG10-280MI20AI	Product code : 14418826
Area classification	: Safe	1010268256

General data		Degree of protection	: IP23
Frame (IEC)	: 280	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	: 1068 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)	320	328	311	185	336	362	380	412	219									
	ΔT=105°C (Ta=40°C)	367	376	357	212	395	414	440	472	254									
	ΔT=125°C (Ta=40°C)	400	410	389	231	420	452	475	515	274									
	ΔT=150°C (Ta=40°C)	430	450	427	248	450	486	515	550	297									
	ΔT=163°C (Ta=27°C)	450	470	446	260	468	506	533	580	308									
Electrical data (FP=0.8 / ΔT=125°C / Ta=40°C)	Xd(%) Dir. axis synchronous reactance	318.1	270.0	256.5	424.2	429.0	360.1	338.0	292.35	450.7									
	X'd(%) Dir. axis transient reactance	16.4	14.8	14.1	21.9	21.6	17.6	16.5	14.91	22.0									
	X''d(%) Dir. axis subtrans. reactance	11.8	10.7	10.1	15.7	15.6	12.7	11.9	10.71	15.9									
	Xq(%) Quad. axis sync. reactance	85.0	76.9	73.1	113.3	136.6	0.0	92.9	104.45	123.9									
	X''q(%) Quad. axis subtrans. react.	9.4	8.4	8.0	12.6	12.5	22.0	9.5	11.7	12.7									
	X2(%) Negative sequence reactance	10.6	9.5	9.0	14.2	14.1	17.4	10.7	11.2	14.3									
	X0(%) Zero sequence reactance	2.0	1.8	1.7	2.6	2.6	2.1	2.0	1.79	2.6									
	T'd(ms) Short Circ. Trans. time const.	110.0	136.0	136.0	146.7	138.0	78.1	137.0	134.03	182.7									
	T''d(ms) Short Circ. Sub. time const.	11.0	1.4	1.4	14.7	2.1	1.6	1.4	1.2	1.8									
	T''do(ms) Open Circ. time const Trans	1584	1951	1951	2112	2102	1030	1998	1874.47	2664									
	T''do(ms) Open Circ. time const Subt	1.7	2.1	2.1	2.3	2.6	2.0	2.0	2.11	2.7									
	Ta(ms) Armature time const.	14	13	13	19	19	14	15	13.09	19									
	uc(V) Full load excitation voltage	60.1	61.6	61.6	60.1	50.5	55.9	53.4	56.66	53.4									
	ic(A) Full load excitation current	2.9	3.0	3.0	2.9	2.4	2.7	2.6	2.72	2.6									
	ic(A) No load excitation current	0.8	0.9	0.9	1.0	0.6	0.7	0.7	0.8	0.9									
Icc(A) Sustained Short-Circ. Current	1823	1775	1624	1732	1914	1855	1870	1858.35	1714										
Kcc Short-circuit ratio	0.31	0.35	0.39	0.41	0.25	0.27	0.29	0.33	0.39										
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	91.1	93	90.8	92.7	90.8	92.7	83.8	85.6	92.3	94	92.1	93.8	92	93.7	91.8	93.5	84.7	86.2
	50% of load	93.8	95.3	93.7	95.2	93.7	95.2	86.3	87.6	94.4	95.7	94.3	95.5	94.2	95.2	94.4	95.7	86.7	87.5
	75% of load	94.1	95.6	94.1	95.6	94.1	95.6	86.5	87.9	94.5	95.8	94.6	95.9	94.7	96	94.8	96.1	87.1	88.4
	100% of load	93.8	95.4	93.9	95.5	93.9	95.5	86.3	87.7	94	95.4	94.3	95.7	94.5	95.8	94.6	96	86.9	88.2
	125% of load	93.2	94.9	93.4	95.2	93.4	95.2	85.8	87.3	93.4	94.9	93.7	95.2	94	95.5	94.2	95.7	86.5	87.8

Other characteristics		Automatic voltage regulator		According to:	
Air flow	: 2.12 m³/s	Accuracy (stability)	: +/- 0.5%	IEC 60034	
Exciter stator winding resistance at 20°C	: 20.86 ohm	Rated current	: 5 A	NBR 5117	
Stator winding resistance at 20°C	: 0.0086 ohm	Analog input	: Yes	NEMA MG1	
Rotor winding resistance	: 1.91 ohm	Digital input	: No	VDE530	
Stator winding layers	: 2	Peak current	: 7 A/10 s	ISO 8528	
Inertia WR²	: 4.82 kgm²	Droop / TC	: Yes	CSA	
NDE Bearing	: 6315 2RS	Dynamic recovery	: 8 to 500 ms		
DE bearing		U/F	: Yes		
Flange	: SAE 1	Internal voltage adjustment	: +/- 15%		
Coupling disc	: SAE 14	External voltage adjustment	: +/- 10%		
		Transient recovery time for ΔU=20%	: 500 ms		

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