DATA SHEET
Synchronous Alternator

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

General data

Frame (IEC)	: 280	Degree of protection	: IP23
Insulation Class	: 180°C (H)	Mounting style	: B15T
Total Harmonic Distortion (no load)	: ≤ 3%	Number of poles	: 4
Stator winding pitch	: 2/3	Type of Pole	: Salient
Altitude	: up to 1000 m.a.s.l	Nominal rotation - 50 Hz	: 1500 rpm
Number of Leads	: 12	Nominal rotation - 60 Hz	: 1800 rpm
Power factor	: 0.8 to 1.0	Overspeed	: 2250 rpm
Excitation system	: Brushless with Auxiliary Coil	Alternator mass	: 1068 kg
Cooling	: IC01	Overload	: 1.1x In per 1h each 6h
		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) Satured reactances values	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

	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	0.8	1.0
Efficiency (%)	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

Air flow	: 2.12 m³/s
Exciter stator winding resistance at 20ºC	: 20.86 ohm
Stator winding resistance at 20ºC	: 0.0086 ohm
Rotor winding resistance	: 1.91 ohm
Stator winding layers	: 2
Inertia WR²	: 4.82 kgm²
NDE Bearing	: 6315 2RS
DE bearing	
Flange	: SAE 1
Coupling disc	: SAE 14

Automatic voltage regulator

Accuracy (stability)	: +/- 0.5%
Rated current	: 5 A
Analog input	: Yes
Digital input	: No
Peak current	: 7 A/10 s
Droop / TC	: Yes
Dynamic recovery	: 8 to 500 ms
U/F	: Yes
Internal voltage adjustment	: +/- 15%
External voltage adjustment	: +/- 10%
Transient recovery time for ΔU=20%	: 500 ms

According to:

IEC 60034
NBR 5117
NEMA MG1
VDE530
ISO 8528
CSA

Rev.	Changes Summary	Performed	Checked	Date

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Checked by		Page	Revision
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