

# DATA SHEET

## Synchronous Alternator



Customer		Notes:
Customer reference		
Product line	: AG10-315MI15AI	Product code : 14419084
Area classification	: Safe	1010272753

<b>General data</b>		Degree of protection	: IP23
Frame (IEC)	: 315	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	: 1318 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)	480	480	456	277	465	500	530	570	306									
	ΔT=105°C (Ta=40°C)	550	550	522	318	535	573	605	650	349									
	<b>ΔT=125°C (Ta=40°C)</b>	<b>600</b>	<b>600</b>	<b>570</b>	<b>346</b>	<b>580</b>	<b>625</b>	<b>660</b>	<b>710</b>	<b>381</b>									
	ΔT=150°C (Ta=40°C)	650	650	617	375	655	686	725	780	419									
	ΔT=163°C (Ta=27°C)	685	685	651	396	675	728	770	825	445									
Electrical data (FP=0.8 / ΔT=125°C / Ta=40°C)	Xd(%) Dir. axis synchronous reactance	254.8	210.7	200.1	339.8	416.1	301.8	283.7	226.4	378.3									
	X'd(%) Dir. axis transient reactance	18.3	15.9	15.1	24.4	24.9	20.5	19.2	16.86	25.7									
	X''d(%) Dir. axis subtrans. reactance	14.7	11.5	10.9	19.6	18.2	15.0	14.1	12.16	18.8									
	Xq(%) Quad. axis sync. reactance	71.9	55.6	52.8	95.8	117.5	106.2	79.0	59.06	105.3									
	X''q(%) Quad. axis subtrans. react.	10.0	8.8	8.3	13.3	13.8	25.6	10.7	9.3	14.3									
	X2(%) Negative sequence reactance	12.3	10.1	9.6	16.4	16.0	20.3	12.4	10.73	16.5									
	X0(%) Zero sequence reactance	2.4	1.9	1.8	3.3	3.0	2.5	2.4	2.03	3.1									
	T'd(ms) Short Circ.Trans.time const.	137.0	134.1	134.1	182.7	139.3	89.5	138.3	134.04	184.5									
	T''d(ms) Short Circ. Sub. time const.	0.9	0.8	0.8	1.2	1.3	1.8	0.9	0.75	1.3									
	T'do(ms) Open Circ. time const Trans	1494	1385	1385	1992	1668	1180	1545	1385.6	2061									
	T''do(ms) Open Circ. time const Subt	1.7	1.7	1.7	2.2	1.8	2.3	1.7	1.68	2.3									
	Ta(ms) Armature time const.	16	14	14	21	22	17	17	14.8	23									
	uc(V) Full load excitation voltage	65.0	55.0	55.0	65.0	60.0	63.1	62.0	70.0	62.0									
	ic(A) Full load excitation current	3.5	3.0	3.0	3.5	3.0	3.2	3.1	3.5	3.1									
	ic(A) No load excitation current	0.8	0.9	0.9	1.1	0.7	0.8	0.8	1.0	1.1									
Icc(A) Sustained Short-Circ. Current	2735	2598	2379	2598	2644	2588	2598	2561.99	2382										
Kcc Short-circuit ratio	0.34	0.4	0.5	0.45	0.24	0.27	0.3	0.4	0.41										
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	90.8	92.8	90.2	92.3	90.2	92.3	83.5	85.4	91.8	93.6	91.6	93.4	91.4	93.3	91	92.9	84.1	85.8
	50% of load	93.5	95.1	93.2	94.9	93.2	94.9	86	87.5	94.1	95.4	94.1	95.4	94.3	95.5	93.8	95.4	86.7	87.8
	75% of load	93.9	95.5	93.8	95.5	93.8	95.5	86.4	87.8	94.4	95.8	94.6	95.9	94.9	96	94.6	96	87.3	88.3
	100% of load	93.6	95.3	93.7	95.4	93.7	95.4	86.1	87.7	94.1	95.6	94.3	95.7	94.6	95.9	94.5	96	87	88.2
	125% of load	93.2	95	93.3	95.2	93.3	95.2	85.7	87.4	93.7	95.2	93.9	95.5	94.1	95.7	94.3	95.9	86.6	88

<b>Other characteristics</b>		<b>Automatic voltage regulator</b>		<b>According to:</b>	
Air flow	: 2.75 m³/s	Accuracy (stability)	: +/- 0.5%	IEC 60034	
Exciter stator winding resistance at 20°C	: 15.26 ohm	Rated current	: 5 A	NBR 5117	
Stator winding resistance at 20°C	: 0.00466 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	: 6.84 kgm²	Droop / TC	: Yes	CSA	
NDE Bearing	: 6316 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		

Rev.	Changes Summary				Performed	Checked	Date
Performed by					Page	Revision	
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Date							