Fujian Kwise Generator CO.,LTD

S224G Range

32kW - 75 kW

APPLICATION AND STANDARD

Kwise 4-pole alternators are designed for delivering superior efficiencies in defense, telecoms, airports, hospitals, buildings and oil exploration, industrial and mining continuous or standby power applications.

Alternators are in compliance to the main domestic and international standards and regulations: GB755, BS5000, IEC 60034, VED0530, CSAC22.2 100, NEMA MG-1.22. Alternators are designed, manufactured and marked in ISO 9001 environments.

ELECTRICAL FEATURES

Automatic voltage regulator: KWISE 4 Pole generators are fitted with reliable and performant AVR's, adapted to KWISE excitation systems, and their transistors have a fulfilling perfect voltage regulation function

Short circuit capacity: KWISE propose two choices of excitation systems, depending on the customer needs:

A) SELF-EXCITATION system, without short-circuit capacity.

B) PMG, with a short-circuit capacity of 3 times the nominal current for 10 seconds.

Transient features: Transient voltage dip for rated step load at 0.4 power factor is less than 15%,Recovery time is less than 1.5s.

Parallel operation: All 4 Pole alternators can operate in parallel with other alternators or with the mains , when they are equipped with the appropriate devices(AVR, current transformer...).

Overload acceptance: 4 Pole alternators can be overloaded according to NEMA.

Single Phase operation:4 Pole alternators SG224 can be reconnected for single phase use. SG224 alternators can be supplied with a dedicated single phase winding. (D51/D61).

Waveform: Total harmonic distorsion(THD) at no load or linear load is less than 5% according to IEC. TIF/Telephone influence factor according to NEMA is less than 50.

Frequency:4 Pole alternators may operate either 50 or 60 Hz. The standard winding (B31,B32) is suitable both for 50 and 60Hz.

Power factor:4 Pole alternator are designed to operate between 0.8 and 1 power factor. A derating is necessary when power factor is below 0.8 (see derating chart).

MECHANICAL FEATURES

Forms: 4 Pole alternator can be provided in single bearing or double bearing configurations according to customer requirements. Adaptors and coupling discs are available to fit the major engines.

Balancing: All the rotors are dynamically balanced strictly according to ISO1940.The double bearing rotors are dynamically balanced with a half key.

Insulation and protection: 4 Pole alternator are class H insulated. The standard winding protection can accept up to 95% relative humidity and is suitable for indoors marine applications. Specific added coatings can be proposed for particularly harsh environments.

Enclosure: Standard enclosure is IP23.

Direction of rotation: 4 pole alternators SG224 can operate in both directions.

Terminal box and connectors: 4 Pole alternators have a large terminal box which allows easy access for re-connection or to the AVR. Current transformers and other optional modules can be fitted within the box.

Bearings: Sealed for life bearings up to all KWISE 4 Pole alternators.

Overspeed: The maximum overspeed is 2250rpm (1.25 times the 60Hz rated speed).

Mechanical structure: Steel frame. Aluminium, cast iron or steel housings and flanges depending on models.

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Common Data

Ambient temp	40℃	Temp rise	125K	Short circuit capacity	/
Altitude	1000m	Voltage regulation	±1%	Cooling method	IC01
Insulation class	Class H	Excitation system	self excitation	Direction of rotation	clockwise
Duty	S1	Winding pitch	2/3	Over speed	2250rpm
Phase	3	Power factor	0.8	Protection	IP23
Pole	4	TIF	<50	Frequency	50/60Hz
AVR	SX460	THF	<2%	THD	<3%

Electrical Data

50Hz/1500RPM		WindingB31/0.8 Power Factor							
Duty/Temp Rise/Ambient T°		Cont./125K/40℃				Standby/150K/40℃			
Phase		3 Phase				3Phase			
Voltage	Y	380V	**400V**	415V	440V	380V	400V	415V	440V
	Δ	220V	**230V**	240V		220V	230V	240V	
	YY				220V				220V
S224G32B1	KVA	40	**40**	40	40	44	44	44	44
	KW	32	**32**	32	32	35	35	35	35
S224G34B2	KVA	43	**43**	43	40	47	47	47	47
	KW	34	**34**	34	34	37	37	37	37
S224G40B3	KVA	50	**50**	50	48	55	55	55	53
	KW	40	**40**	40	38	44	44	44	42
S224G45B4	KVA	56	**56**	56	54	62	62	62	59
	KW	45	**45**	45	43	50	50	50	47
S224G50C5	KVA	63	**63**	63	60	69	69	69	66
	KW	50	**50**	50	48	55	55	55	53
S224G54C6	KVA	68	**68**	68	65	74	74	74	72
	KW	54	**54**	54	52	59	59	59	58
S224G58C7	KVA	73	**73**	73	70	81	81	81	79
	KW	58	**58**	58	56	65	65	65	63
S224G64D8	KVA	80	**80**	80	76	88	88	88	84
	KW	64	**64**	64	61	70	70	70	67
S224G68D9	KVA	85	**85**	85	79	94	94	94	89
	KW	68	**68**	68	63.2	75	75	75	71
S224G75D10	KVA	94	**94**	94	86	103	103	103	96
	KW	75	**75**	75	69	83	83	83	77

***Other Voltage:Consult the factory**

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Electrical Data

60Hz/1800RPM		WindingB32/0.8 Power Factor							
Duty/Temp Rise/Ambient T°		Cont./125K/40℃				Standby/150K/40℃			
Phase		3 Phase				3Phase			
Voltage	Y	416V	**440V**	460V	480V	416V	440V	460V	480V
	Δ	240V				240V			
	YY	208V	**220V**	230V	240V	208V	220V	230V	240V
S224G32B1	KVA	48	**48**	48	48	53	53	53	53
	KW	38	**38**	38	38	42	42	42	42
S224G34B2	KVA	51	**51**	51	51	56	56	56	56
	KW	41	**41**	41	41	45	45	45	45
S224G40B3	KVA	60	**60**	60	60	66	66	66	66
	KW	48	**48**	48	48	53	53	53	53
S224G45B4	KVA	68	**68**	68	68	74	74	74	74
	KW	54	**54**	54	54	59	59	59	59
S224G50C5	KVA	75	**75**	75	75	83	83	83	83
	KW	60	**60**	60	60	66	66	66	66
S224G54C6	KVA	81	**81**	81	81	89	89	89	89
	KW	65	**65**	65	65	71	71	71	71
S224G58C7	KVA	87	**87**	87	87	96	96	96	96
	KW	70	**70**	70	70	77	77	77	77
S224G64D8	KVA	96	**96**	96	96	106	106	106	106
	KW	77	**77**	77	77	85	85	85	85
S224G68D9	KVA	102	**102**	102	102	112	112	112	112
	KW	82	**82**	82	82	90	90	90	90
S224G75D10	KVA	113	**113**	113	113	124	124	124	124
	KW	90	**90**	90	90	99	99	99	99

***Other Voltage:Consult the factory**

Inertia & Efficiency

Model	S224G	32B1	34B2	40B3	45B4	50C5	54C6	58C7	64D8	68D9	75D10
Inertia(SB).J	kgm^2	0.374	0.419	0.443	0.525	0.547	0.592	0.637	0.704	0.749	0.792
Efficiency(100%Load)	%	87.4	88.1	88.9	89.1	89.5	89.6	90.7	90.8	90.9	90.9

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Reactance-time constant(s)

50Hz @ 400V	S224G	32B1	34B2	40B3	45B4	50C5	54C6	58C7	64D8	68D9	75D10
Short-circuit ratio	Kcc	0.439	0.457	0.476	0.461	0.446	0.464	0.483	0.468	0.455	0.442
Direct-axis synchro. reactance unsaturated	Xd	2.280	2.190	2.100	2.170	2.240	2.155	2.070	2.135	2.200	2.265
Direct-axis transient reactance saturated	X'd	0.180	0.170	0.160	0.165	0.170	0.165	0.160	0.165	0.170	0.175
Direct-axis subtransient reactance saturated	X"d	0.110	0.110	0.110	0.115	0.120	0.115	0.110	0.115	0.120	0.125
Quadrature-axis synchro. Reactance unsaturated	Xq	1.050	1.010	0.970	0.995	1.020	0.985	0.950	0.980	1.010	1.040
Quadrature-axis subtransient reactance saturated	X"q	0.150	0.140	0.130	0.130	0.130	0.135	0.140	0.145	0.150	0.155
Negative sequence reactance saturated	X2	0.140	0.130	0.120	0.120	0.120	0.125	0.130	0.135	0.140	0.145
Zero sequence reactance	X0	0.100	0.090	0.080	0.090	0.100	0.100	0.100	0.100	0.100	0.100
Short-circuit transient time constant	T'd	0.023s	0.025s	0.027s	0.027s	0.028s	0.027s	0.030s	0.031s	0.032s	0.032s
Subtransient time constant	T"d	0.006s	0.006s	0.006s	0.006s	0.007s	0.008s	0.008s	0.008s	0.008s	0.008s
No-load transient time constant	T'do	0.60s	0.65s	0.70s	0.70s	0.70s	0.65s	0.70s	0.75s	0.75s	0.80s
Armature time constant	Ta	0.0045s	0.005s	0.0055s	0.006s	0.006s	0.0065s	0.0065s	0.007s	0.007s	0.0075s

60Hz @ 440V	S224G	32B1	34B2	40B3	45B4	50C5	54C6	58C7	64D8	68D9	75D10
Short-circuit ratio	Kcc	0.351	0.352	0.353	0.357	0.360	0.390	0.426	0.415	0.405	0.395
Direct-axis synchro. reactance unsaturated	Xd	0.850	2.840	2.830	2.805	2.780	2.565	2.350	2.410	2.470	2.530
Direct-axis transient reactance saturated	X'd	0.220	0.210	0.200	0.200	0.200	0.200	0.200	0.195	0.190	0.185
Direct-axis subtransient reactance saturated	X"d	0.140	0.140	0.140	0.140	0.140	0.135	0.130	0.130	0.130	0.130
Quadrature-axis synchro. Reactance unsaturated	Xq	1.320	1.310	1.300	1.290	1.280	1.180	1.080	1.105	1.130	1.155
Quadrature-axis subtransient reactance saturated	X"q	0.135	0.130	0.130	0.130	0.130	0.125	0.120	0.130	0.140	0.150
Negative sequence reactance saturated	X2	0.110	0.120	0.130	0.130	0.130	0.125	0.120	0.130	0.140	0.150
Zero sequence reactance	X0	0.070	0.075	0.080	0.080	0.080	0.085	0.090	0.095	0.100	0.105
Short-circuit transient time constant	T'd	0.023s	0.025s	0.027s	0.027s	0.028s	0.027s	0.030s	0.031s	0.032s	0.032s
Subtransient time constant	T"d	0.006s	0.006s	0.006s	0.006s	0.007s	0.008s	0.008s	0.008s	0.008s	0.008s
No-load transient time constant	T'do	0.60s	0.65s	0.70s	0.70s	0.70s	0.65s	0.70s	0.75s	0.75s	0.80s
Armature time constant	Ta	0.0045s	0.005s	0.0055s	0.006s	0.006s	0.0065s	0.0065s	0.007s	0.007s	0.0075s

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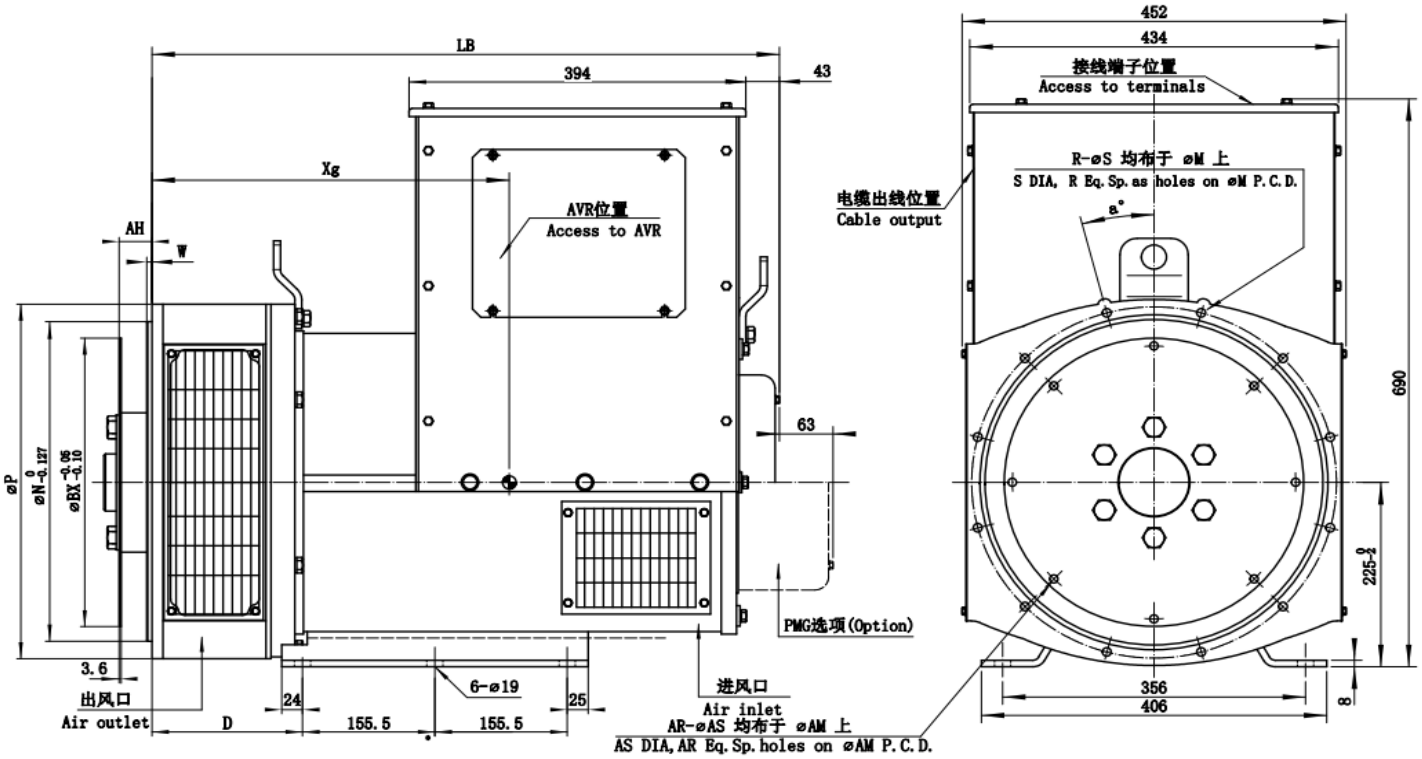
Outline Drawing（Single Bearing）



Dimensions(mm)					
Model	LB		*Xg	Net W.	Packing
	SAE1	SAE2&3&4			
	mm	mm	mm	kg	L x W x H(mm)
S224G32B1	661.3	647	302	216	794*544*857
S224G34B2	661.3	647	311	222	794*544*857
S224G40B3	661.3	647	321	239	794*544*857
S224G45B4	661.3	647	332	250	794*544*857
S224G50C5	751.3	737	340	273	894*544*857
S224G54C6	751.3	737	343	287	894*544*857
S224G58C7	751.3	737	346	298	894*544*857
S224G64D8	796.3	782	354	321	934*544*857
S224G68D9	796.3	782	361	335	934*544*857
S224G75D10	796.3	782	371	341	934*544*857

Flange (mm)							
S.A.E	P	N	M	R-øS	W	D	a°
#1	533	511.175	530.225	12-ø12	6	191.3	15°
#2	490	447.675	466.725	12-ø12	5	177	15°
#3	451	409.575	428.625	12-ø12	5	177	15°
#4	402	361.95	381	12-ø12	5	177	15°

Coupling Discs (mm)				
S.A.E	BX	AM	AR-øAS	AH
#7.5	241.3	222.25	8-ø9	30.2
#8	263.525	244.475	6-ø11	62
#10	314.325	295.3	8-ø11	53.8
#11.5	352.425	333.38	8-ø11	39.6
#14	466.725	438.15	8-ø14	25.4

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4 Pole

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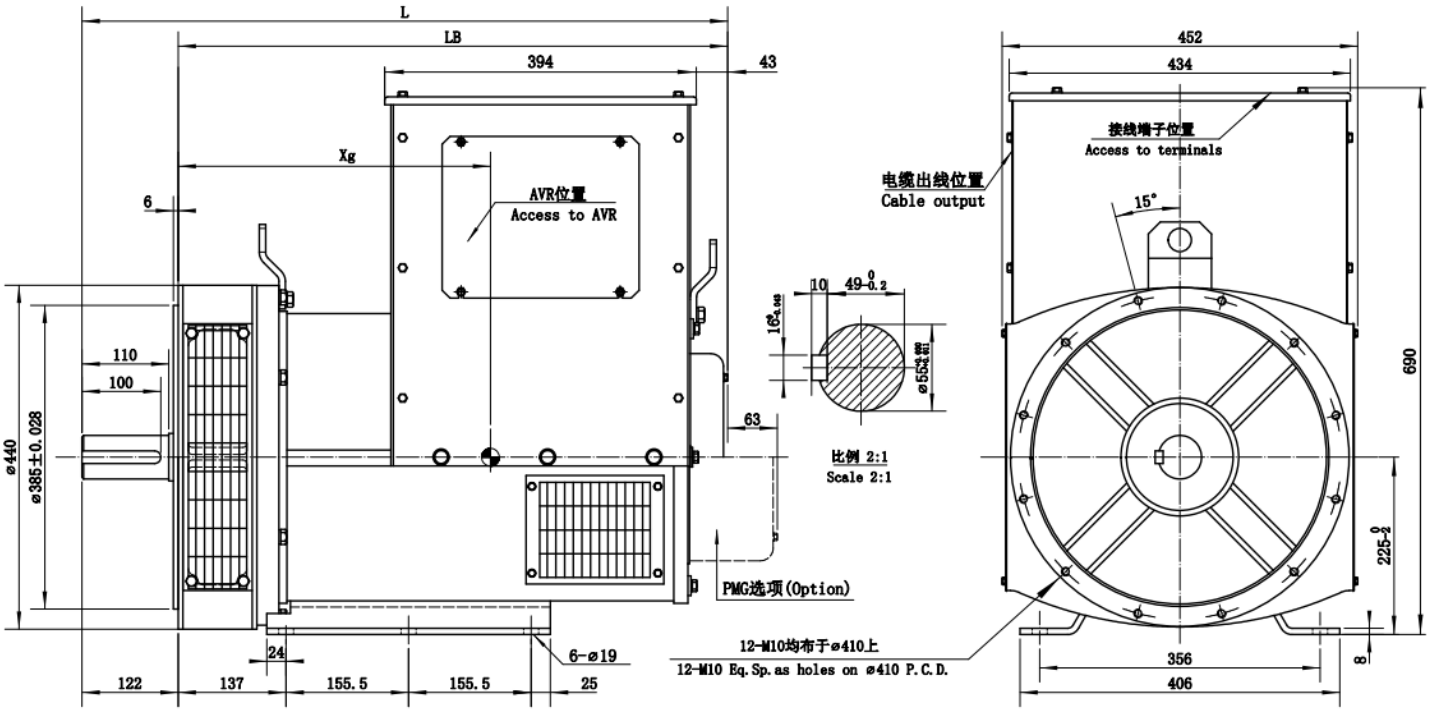
Outline Drawing（Double Bearing）



Dimensions(mm)					
Model	L	LB	*Xg	Net W.	Packing
	mm	mm	mm	kg	L x W x H(mm)
S224G32B1	729	607	263	226	894*544*857
S224G34B2	729	607	263	237	894*544*857
S224G40B3	729	607	273	259	894*544*857
S224G45B4	729	607	273	268	894*544*857
S224G50C5	819	697	292	293	934*544*857
S224G54C6	819	697	292	309	934*544*857
S224G58C7	819	697	298	308	934*544*857
S224G64D8	864	742	306	331	1024*624*947
S224G68D9	864	742	313	345	1024*624*947
S224G75D10	864	742	323	375	1024*624*947