



Fujian Kwise Generator CO.,LTD

**S314G Range**

**200kW - 360 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 SG314 can be reconnected for single phase use.

**Waveform:** Total harmonic distortion (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 SG314 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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4 Pole

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**Common Data**

Ambient temp	40°C	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	SX440	THF	<2%	THD	<3%

**Electrical Data**

50Hz/1500RPM		WindingB31/0.8 Power Factor							
Duty/Temp Rise/Ambient T°		Cont./125K/40°C				Standby/150K/40°C			
Phase		3 Phase				3Phase			
Voltage	Y	380V	<b>400V</b>	415V	440V	380V	400V	415V	440V
	Δ	220V	<b>230V</b>	240V		220V	230V	240V	
	YY				220V				220V
S314G200D1	KVA	250	<b>250</b>	250	250	275	275	275	275
	KW	200	<b>200</b>	200	200	220	220	220	220
S314G220D2	KVA	275	<b>275</b>	275	263	303	303	303	289
	KW	220	<b>220</b>	220	210	242	242	242	231
S314G240D3	KVA	300	<b>300</b>	300	285	330	330	330	314
	KW	240	<b>240</b>	240	228	264	264	264	251
S314G250D4	KVA	313	<b>313</b>	313	294	344	344	344	323
	KW	250	<b>250</b>	250	235	275	275	275	259
S314G260D5	KVA	325	<b>325</b>	325	305	358	358	358	336
	KW	260	<b>260</b>	260	244	286	286	286	268
S314G280D6	KVA	350	<b>350</b>	350	325	385	385	385	358
	KW	280	<b>280</b>	280	260	308	308	308	286
S314G300E7	KVA	375	<b>375</b>	375	350	413	413	413	385
	KW	300	<b>300</b>	300	280	330	330	330	308
S314G320E8	KVA	400	<b>400</b>	400	369	440	440	440	406
	KW	320	<b>320</b>	320	295	352	352	352	325
S314G360E9	KVA	450	<b>450</b>	450	419	495	495	495	461
	KW	360	<b>360</b>	360	335	396	396	396	369

\*Other Voltage:Consult the factory



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4 Pole

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Electrical Data

60Hz/1800RPM		WindingB32/0.8 Power Factor							
Duty/Temp Rise/Ambient T°		Cont./125K/40°C				Standby/150K/40°C			
Phase		3 Phase				3Phase			
Voltage	Y	416V	<b>440V</b>	460V	480V	416V	440V	460V	480V
	Δ	240V				240V			
	YY	208V	<b>220V</b>	230V	240V	208V	220V	230V	240V
S314G200D1	KVA	300	<b>300</b>	300	300	330	330	330	330
	KW	240	<b>240</b>	240	240	264	264	264	264
S314G220D2	KVA	330	<b>330</b>	330	330	363	363	363	363
	KW	264	<b>264</b>	264	264	290	290	290	290
S314G240D3	KVA	360	<b>360</b>	360	360	381	381	381	381
	KW	288	<b>288</b>	288	288	305	305	305	305
S314G250D4	KVA	375	<b>375</b>	375	375	413	413	413	413
	KW	300	<b>300</b>	300	300	330	330	330	330
S314G260D5	KVA	390	<b>390</b>	390	390	429	429	429	429
	KW	312	<b>312</b>	312	312	343	343	343	343
S314G280D6	KVA	420	<b>420</b>	420	420	462	462	462	462
	KW	336	<b>336</b>	336	336	370	370	370	370
S314G300E7	KVA	450	<b>450</b>	450	450	495	495	495	495
	KW	360	<b>360</b>	360	360	396	396	396	396
S314G320E8	KVA	480	<b>480</b>	480	480	528	528	528	528
	KW	384	<b>384</b>	384	384	422	422	422	422
S314G360E9	KVA	540	<b>540</b>	540	540	593	593	593	593
	KW	432	<b>432</b>	432	432	474	474	474	474

\*Other Voltage:Consult the factory

Inertia & Efficiency

Model	S314G	200D1	220D2	240D3	250D4	260D5	280D6	300E7	320E8	360E9
Inertia(SB).J	kgm^2	3.731	4.047	4.281	4.606	4.865	5.245	5.701	6.217	6.629
Efficiency(100%Load)	%	94.1	94.2	94.3	94.4	94.5	94.6	94.7	94.8	94.9



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4 Pole

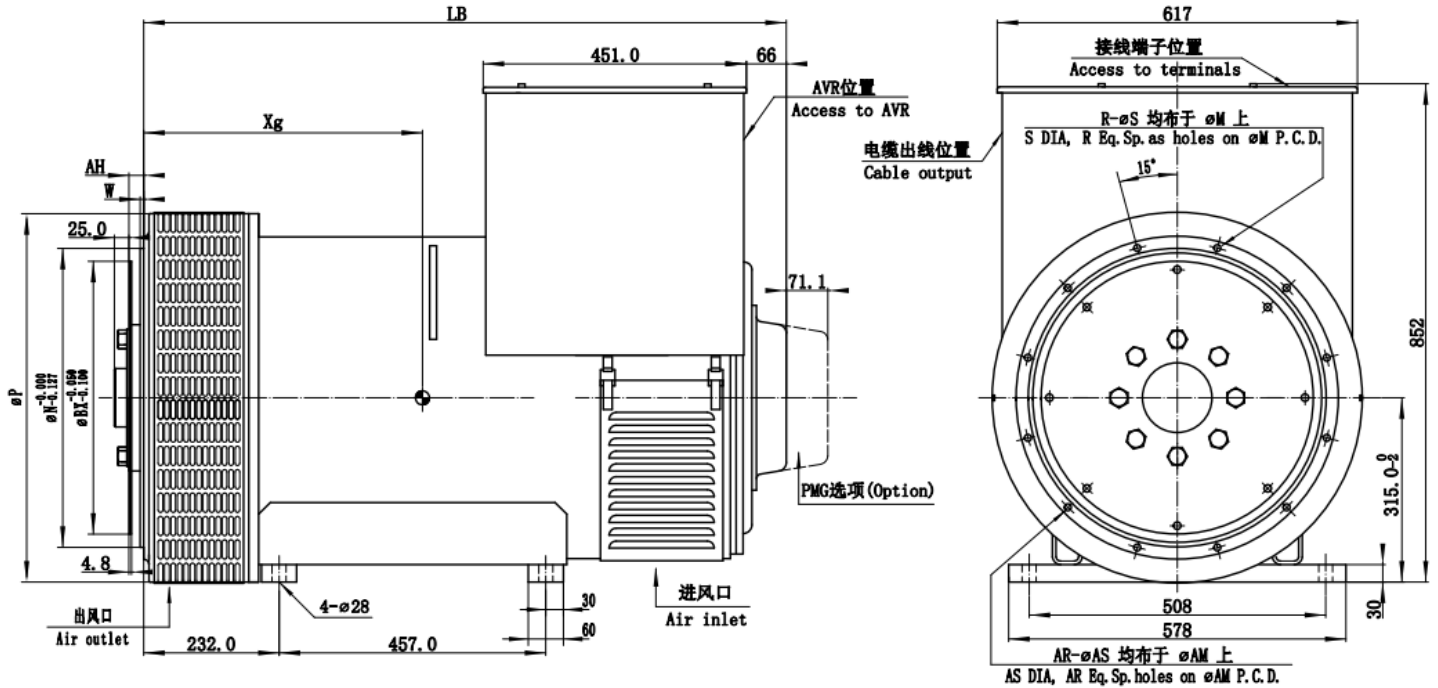
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Reactance-time constant(s)

50Hz @ 400V	S314G	200D1	220D2	240D3	250D4	260D5	280D6	300E7	320E8	360E9
Short-circuit ratio	Kcc	0.352	0.354	0.356	0.375	0.397	0.412	0.427	0.444	0.463
Direct-axis synchro. reactance unsaturated	Xd	2.840	2.825	2.810	2.665	2.520	2.430	2.340	2.250	2.160
Direct-axis transient reactance saturated	X'd	0.180	0.180	0.180	0.175	0.170	0.160	0.150	0.140	0.130
Direct-axis subtransient reactance saturated	X''d	0.130	0.130	0.130	0.125	0.120	0.115	0.110	0.105	0.100
Quadrature-axis synchro. Reactance unsaturated	Xq	2.440	2.400	2.360	2.260	2.160	2.085	2.010	1.935	1.860
Quadrature-axis subtransient reactance saturated	X''q	0.360	0.350	0.340	0.320	0.300	0.285	0.270	0.255	0.240
Negative sequence reactance saturated	X2	0.250	0.245	0.240	0.220	0.200	0.195	0.190	0.185	0.180
Zero sequence reactance	X0	0.090	0.090	0.090	0.085	0.080	0.080	0.080	0.080	0.080
Short-circuit transient time constant	T'd	0.07s	0.07s	0.07s	0.08s	0.08s	0.085s	0.085s	0.085s	0.085s
Subtransient time constant	T''d	0.018s	0.018s	0.018s	0.019s	0.019s	0.020s	0.020s	0.020s	0.020s
No-load transient time constant	T'do	1.65s	1.65s	1.65s	1.7s	1.7s	1.75s	1.75s	1.75s	1.75s
Armature time constant	Ta	0.017s	0.017s	0.017s	0.018s	0.018s	0.019s	0.019s	0.019s	0.019s

60Hz @ 440V	S314G	200D1	220D2	240D3	250D4	260D5	280D6	300E7	320E8	360E9
Short-circuit ratio	Kcc	0.290	0.297	0.305	0.314	0.325	0.332	0.339	0.374	0.355
Direct-axis synchro. reactance unsaturated	Xd	3.450	3.365	3.280	3.180	3.080	3.015	2.950	2.885	2.820
Direct-axis transient reactance saturated	X'd	0.220	0.210	0.200	0.190	0.180	0.175	0.170	0.165	0.160
Direct-axis subtransient reactance saturated	X''d	0.150	0.145	0.140	0.135	0.130	0.125	0.120	0.115	0.110
Quadrature-axis synchro. Reactance unsaturated	Xq	2.980	2.890	2.800	2.695	2.590	2.600	2.610	2.620	2.630
Quadrature-axis subtransient reactance saturated	X''q	0.400	0.385	0.370	0.365	0.360	0.375	0.390	0.405	0.420
Negative sequence reactance saturated	X2	0.280	0.270	0.260	0.255	0.250	0.255	0.260	0.265	0.270
Zero sequence reactance	X0	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Short-circuit transient time constant	T'd	0.07s	0.07s	0.08s	0.08s	0.08s	0.085s	0.085s	0.085s	0.085s
Subtransient time constant	T''d	0.018s	0.018s	0.019s	0.019s	0.019s	0.020s	0.020s	0.020s	0.020s
No-load transient time constant	T'do	1.65s	1.65s	1.7s	1.7s	1.7s	1.75s	1.75s	1.75s	1.75s
Armature time constant	Ta	0.017s	0.017s	0.018s	0.018s	0.018s	0.019s	0.019s	0.019s	0.019s

Outline Drawing (Single Bearing)



Dimensions(mm)

Model	LB	*Xg	Net W.	Packing
	mm	mm	kg	L x W x H(mm)
S314G200D1	1101	463	721	1326*786*1063
S314G220D2	1101	472	757	1326*786*1063
S314G240D3	1101	483	799	1326*786*1063
S314G250D4	1101	494	817	1326*786*1063
S314G260D5	1101	504	871	1326*786*1063
S314G280D6	1101	515	913	1326*786*1063
S314G300E7	1191	530	943	1416*786*1063
S314G320E8	1191	542	1033	1416*786*1063
S314G360E9	1191	558	1069	1416*786*1063

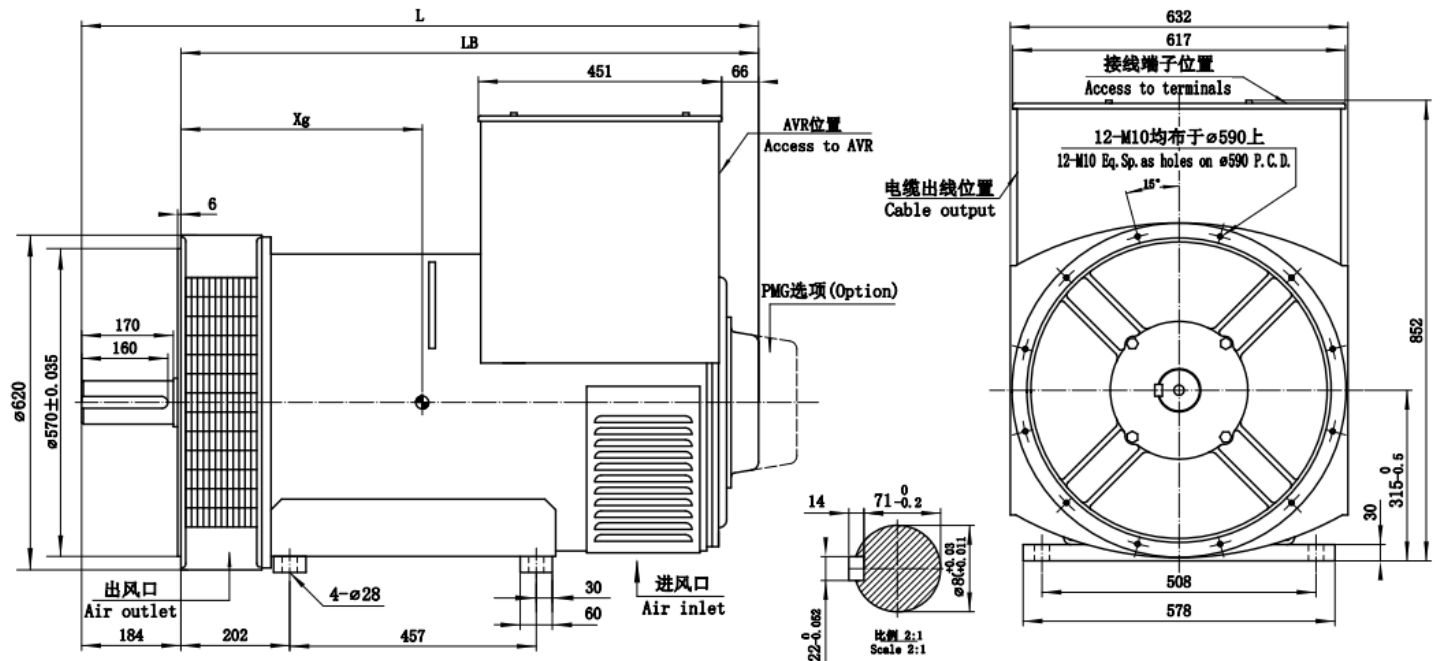
Flange (mm)

S.A.E	P	N	M	R-φS	W	a°
#0	711	647.7	679.45	16-φ14	6	11.25°
#1/2	680	584.2	619.125	12-φ14	6	15°
#1	617	511.175	530.225	12-φ12	6	15°

Coupling Discs (mm)

S.A.E	BX	AM	AR-φAS	AH
#11.5	352.425	333.38	8-φ11	39.6
#14	466.725	438.15	8-φ14	25.4
#18	571.5	542.925	6-φ17	15.7

Outline Drawing (Double Bearing)



Dimensions(mm)					
Model	L	LB	*Xg	Net W.	Packing
	mm	mm	mm	kg	L x W x H(mm)
S314G200D1	1255	1071	433	736	1416*786*1063
S314G220D2	1255	1071	442	772	1416*786*1063
S314G240D3	1255	1071	453	814	1416*786*1063
S314G250D4	1255	1071	465	837	1416*786*1063
S314G260D5	1255	1071	474	886	1416*786*1063
S314G280D6	1255	1071	485	928	1416*786*1063
S314G300E7	1345	1071	500	958	1466*786*1063
S314G320E8	1345	1161	512	1048	1466*846*1193
S314G360E9	1345	1161	528	1084	1466*846*1193