



Fujian Kwise Generator CO.,LTD

**S404G Range**

**600kW - 1200 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.

**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:** SG404 are only available for clockwise running. (See from the driving end).

**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	≥ 300%
Altitude	1000m	Voltage regulation	±0.5%	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	MX341B	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	
S404G600D1	KVA	750	<b>750</b>	750	725	825	825	825	798
	KW	600	<b>600</b>	600	580	660	660	660	638
S404G640D2	KVA	800	<b>800</b>	800	775	880	880	880	853
	KW	640	<b>640</b>	640	620	704	704	704	682
S404G728D3	KVA	900	<b>910</b>	900	875	990	990	990	963
	KW	720	<b>728</b>	720	700	792	792	792	770
S404G800D4	KVA	988	<b>1000</b>	988	738	1086	1086	1086	1031
	KW	790	<b>800</b>	790	750	869	869	869	825
S404G900D5	KVA	1100	<b>1125</b>	1100	1050	1210	1238	1210	1155
	KW	880	<b>900</b>	880	840	968	990	968	924
S404G1000E6	KVA	1200	<b>1250</b>	1200	1125	1320	1375	1320	1238
	KW	960	<b>1000</b>	960	900	1056	1100	1056	990
S404G1100E7	KVA	1313	<b>1375</b>	1313	1225	1444	1513	1444	1348
	KW	1050	<b>1100</b>	1050	980	1155	1210	1155	1078
S404G1200E8	KVA	1438	<b>1500</b>	1438	1350	1582	1650	1582	1485
	KW	1150	<b>1200</b>	1150	1080	1265	1320	1265	1188

\*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			
S404G600D1	KVA	850	<b>875</b>	900	900	935	963	990	990
	KW	680	<b>700</b>	720	720	748	770	792	792
S404G640D2	KVA	900	<b>925</b>	960	960	990	1018	1056	1056
	KW	720	<b>740</b>	768	768	792	814	845	845
S404G728D3	KVA	1044	<b>1063</b>	1092	1092	1148	1169	1201	1201
	KW	835	<b>850</b>	874	874	919	935	961	961
S404G800D4	KVA	1138	<b>1163</b>	1200	1200	1252	1279	1320	1320
	KW	910	<b>930</b>	960	960	1001	1023	1056	1056
S404G900D5	KVA	1288	<b>1313</b>	1350	1350	1417	1444	1485	1485
	KW	1030	<b>1050</b>	1080	1080	1133	1155	1188	1188
S404G1000E6	KVA	1425	<b>1450</b>	1500	1500	1568	1595	1650	1650
	KW	1140	<b>1160</b>	1200	1200	1254	1276	1320	1320
S404G1100E7	KVA	1563	<b>1600</b>	1650	1650	1719	1760	1815	1815
	KW	1250	<b>1280</b>	1320	1320	1375	1408	1452	1452
S404G1200E8	KVA	1700	<b>1750</b>	1800	1800	1870	1925	1980	1980
	KW	1360	<b>1400</b>	1440	1440	1496	1540	1584	1584

\*Other Voltage:Consult the factory

Inertia & Efficiency

Model	S404G	600D1	640D2	728D3	800D4	900D5	1000E6	1100E7	1200E8
Inertia(SB).J	kgm^2	17.621	18.535	19.631	21.642	25.114	30.743	32.207	33.654
Efficiency(100%Load)	%	96.1	96.2	96.3	96.4	96.5	96.6	96.7	96.7



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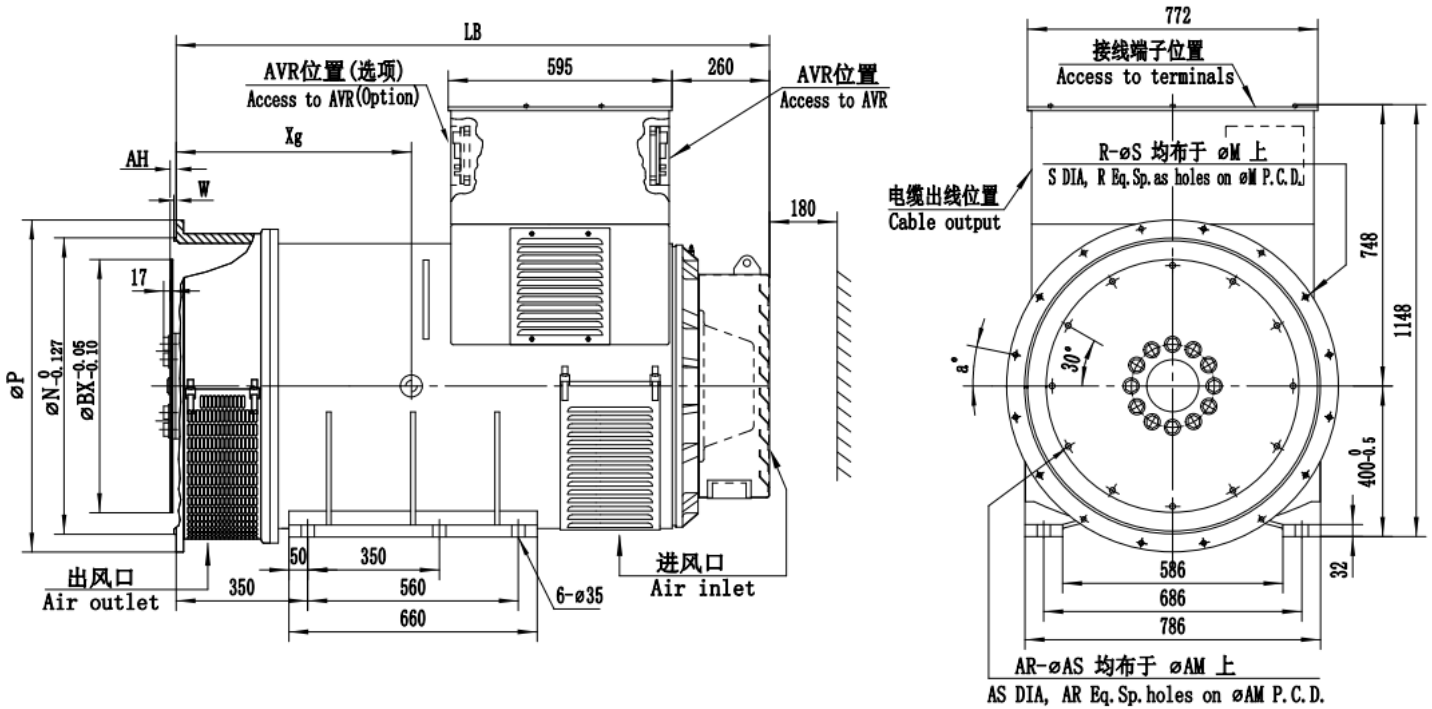
4 Pole

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Reactance-time constant(s)

50Hz @ 400V	S404G	600D1	640D2	728D3	800D4	900D5	1000E6	1100E7	1200E8
Short-circuit ratio	Kcc	0.347	0.353	0.370	0.366	0.398	0.402	0.405	0.408
Direct-axis synchro. reactance unsaturated	Xd	2.880	2.830	2.700	2.730	2.510	2.490	2.740	2.450
Direct-axis transient reactance saturated	X'd	0.230	0.230	0.230	0.220	0.200	0.190	0.190	0.180
Direct-axis subtransient reactance saturated	X''d	0.160	0.160	0.160	0.150	0.140	0.140	0.130	0.130
Quadrature-axis synchro. Reactance unsaturated	Xq	1.700	1.700	1.600	1.610	1.470	1.450	1.400	1.400
Quadrature-axis subtransient reactance saturated	X''q	0.190	0.190	0.170	0.190	0.210	0.220	0.230	0.230
Negative sequence reactance saturated	X2	0.210	0.200	0.180	0.190	0.200	0.210	0.220	0.220
Zero sequence reactance	X0	0.030	0.030	0.020	0.020	0.020	0.020	0.020	0.020
Short-circuit transient time constant	T'd	0.185s	0.185s	0.185s	0.185s	0.185s	0.185s	0.185s	0.185s
Subtransient time constant	T''d	0.025s	0.025s	0.025s	0.025s	0.025s	0.025s	0.025s	0.025s
No-load transient time constant	T'do	2.35s	2.35s	2.44s	3.03s	3.4s	3.4s	3.5s	3.5s
Armature time constant	Ta	0.04s	0.04s	0.04s	0.046s	0.049s	0.052s	0.052s	0.052s

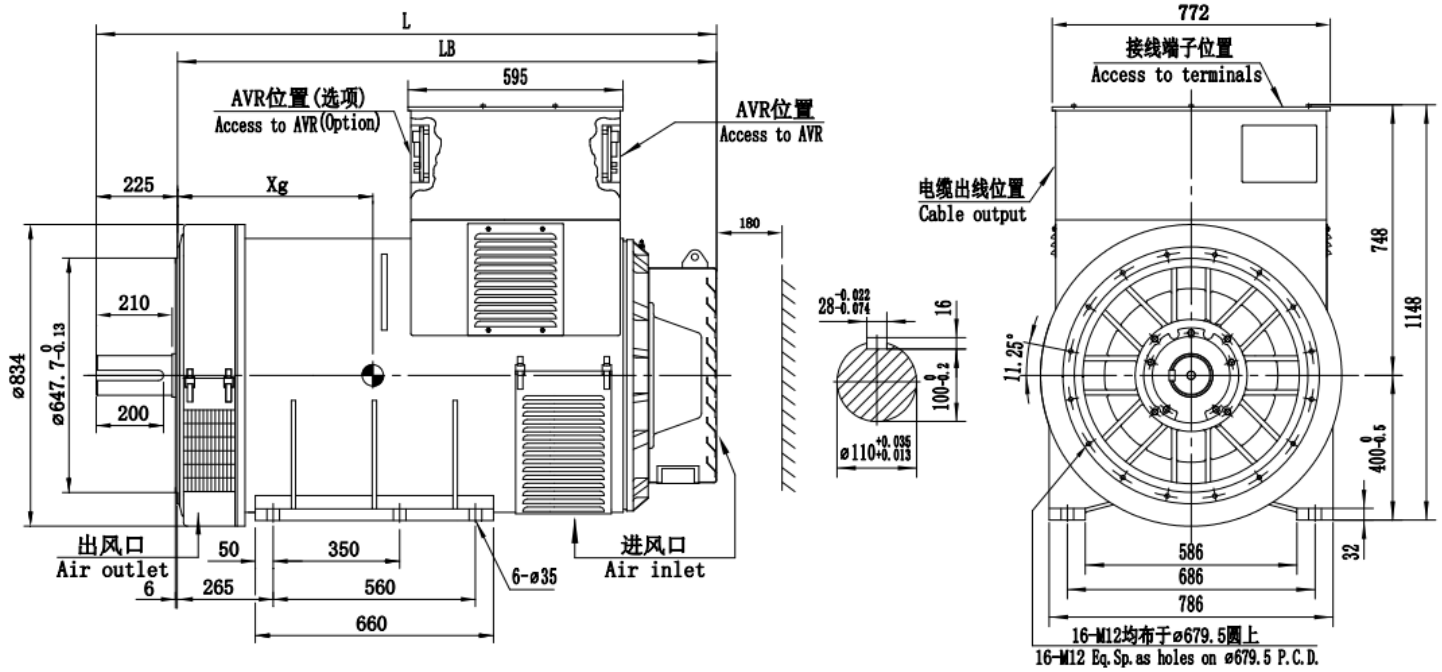
60Hz @ 440V	S404G	600D1	640D2	728D3	800D4	900D5	1000E6	1100E7	1200E8
Short-circuit ratio	Kcc	0.282	0.299	0.319	0.308	0.333	0.357	0.364	0.382
Direct-axis synchro. reactance unsaturated	Xd	3.550	3.340	3.130	3.250	3.000	2.800	2.750	2.620
Direct-axis transient reactance saturated	X'd	0.250	0.260	0.270	0.260	0.240	0.240	0.220	0.220
Direct-axis subtransient reactance saturated	X''d	0.220	0.200	0.180	0.180	0.170	0.170	0.160	0.160
Quadrature-axis synchro. Reactance unsaturated	Xq	2.100	1.980	1.860	1.910	1.760	1.730	1.710	1.700
Quadrature-axis subtransient reactance saturated	X''q	0.260	0.230	0.200	0.230	0.250	0.250	0.260	0.260
Negative sequence reactance saturated	X2	0.250	0.230	0.210	0.230	0.240	0.240	0.250	0.250
Zero sequence reactance	X0	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.030
Short-circuit transient time constant	T'd	0.185s	0.185s	0.185s	0.185s	0.185s	0.185s	0.185s	0.185s
Subtransient time constant	T''d	0.025s	0.025s	0.025s	0.025s	0.025s	0.025s	0.025s	0.025s
No-load transient time constant	T'do	2.35s	2.35s	2.44s	3.03s	3.4s	3.4s	3.5s	3.5s
Armature time constant	Ta	0.04s	0.04s	0.04s	0.046s	0.049s	0.052s	0.052s	0.052s

**Outline Drawing (Single Bearing)**


Dimensions	LB	*Xg	Net W.	Packing
Model	mm	mm	kg	L x W x H(mm)
S404G600D1	1578	587	1791	1900*1000*1390
S404G640D2	1578	591	1887	1900*1000*1390
S404G728D3	1578	597	1859	1900*1000*1390
S404G800D4	1578	607	2031	1900*1000*1390
S404G900D5	1578	625	2283	1900*1000*1390
S404G1000E6	1679	735	2575	2000*1000*1390
S404G1100E7	1679	788	2635	2000*1000*1390
S404G1200E8	1679	808	2695	2000*1000*1390

Flange (mm)							Coupling Discs (mm)				
S.A.E	P	N	M	R-øS	W	a°	S.A.E	BX	AM	AR-øAS	AH
#00	882	787.4	850.9	16-ø14	6	11.25°	#18	571.5	542.925	6-ø17	15.7
#0	830	647.7	679.45	16-ø14	6	11.25°	#21	673.1	641.35	12-ø17	0
							#24	733.3	692	12-ø21	0

Outline Drawing (Double Bearing)



Dimensions	L	LB	*Xg	Net W.	Packing
Model	mm	mm	mm	kg	L x W x H(mm)
S404G600D1	1718	1493	587	1801	2000*1000*1390
S404G640D2	1718	1493	591	1897	2000*1000*1390
S404G728D3	1718	1493	597	1869	2000*1000*1390
S404G800D4	1718	1493	607	2051	2000*1000*1390
S404G900D5	1718	1493	625	2293	2000*1000*1390
S404G1000E6	1904	1679	753	2585	2040*1050*1580
S404G1100E7	1904	1679	788	2645	2040*1050*1580
S404G1200E8	1904	1679	808	2705	2040*1050*1580