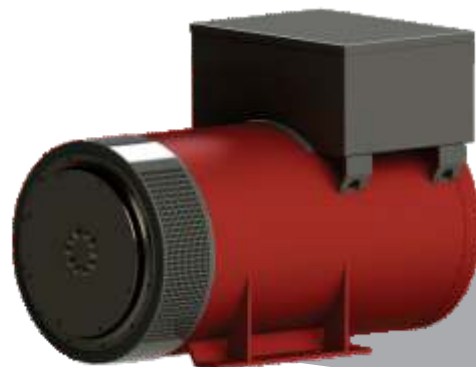


Application and Standard

The 4-pole generator is suitable for matching with a reciprocating internal combustion engine (commonly called a diesel engine) to form a generator set, which can be used as a fixed power supply or backup power supply for national defense, post and telecommunications, airports, hospitals, buildings, oil exploration, industrial and mining enterprises and other departments. Potenza Alternators are in compliance to the main domestic and international standards and regulations.



Electrical features

Automatic voltage regulators: Potenza 4 Pole Alternators are fitted with reliable and performant AVR, adapted to excitation systems, powered by transistors and fulfilling perfect regulation.

Short circuit capacity: Potenza propose two choices of excitation systems to meet different customer requirements:

- A) Self-Excitation system, without short-circuit capacity.
- B) PMG, with a short-circuit capacity of 3 times of the nominal current for 10 seconds.

Transient features: Transient voltage dip for 60% rated current at 0.4 power factor is less than 15%. Recovery time for a 15% transient voltage dip 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. Telephone influence factor(TIF) according to NEMA is less than 50.

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

Power factor: 4 pole alternators are designed to operate between 0.8 and 1.0 power factor. A derating is necessary below 0.8 power factor (see derating table).

Mechanical features

Forms: 4 pole alternators can be provided in single bearing or double bearing configurations according to customer's requirements, as well as Engine adaptors and coupling discs which are fit for the major engines.

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

Insulation and protection: 4 pole alternators are class H insulated. The standard winding protection can accept up to 95% relative humidity and is suitable in the cabins. Specific added coatings can be proposed for harsh environments.

Enclosure: Standard enclosure is IP23.

Direction of rotation: F8-2750 series can operate in both directions.

Terminal box and connectors: 4 pole alternators have a terminal box which allows easy access for connection of AVR or reconnection. Current transformers or other optional modules can be fitted within the box.

Bearings: Sealed for life bearings up to all Potenza 4 pole alternator.

Overspeed: The maximum overspeed is 2250 RPM for the 4 pole alternator (1.25 times the 60Hz rated speed).

Mechanical structure: Steel frame. Cast iron or steel housing and flanges depending on models.

General Parameters

Ambient temperature	40°C	Temperature rise	125K	Short circuit current multiple	/
Altitude	1000m	Voltage Regulation	±1%	Cooling method	IC01
Insulation class	Class H	Exciter method	Brushless self-excitation	Direction of rotation	Clockwise
Duty type	S1	Winding pitch	2/3	Maximum speed	2250 rpm
Phases	3	Power factor	0.8	Protection grade	IP23
Number of poles	4	TIF	<50	Frequency	50/60Hz
AVR model	KR440	THF	<2%	THD	1.2%~2.5%

Electrical parameters

50Hz/1500RPM		Standard winding / Power factor 0.8							
Duty type / temp rise / ambient temp		Cont. / 125K / 40°C				Standby / 163K / 27°C			
Phase		3 Phases				3 Phases			
Voltage	Y	380V	400V	415V	440V	380V	400V	415V	440V
	Δ	220V	230V	240V		220V	230V	240V	
PO1700	KVA	1563	1563	1563	1484	1750	1750	1750	1633
	KW	1250	1250	1250	1188	1400	1400	1400	1306
PO1875	KVA	1688	1688	1688	1603	1890	1890	1890	1763
	KW	1350	1350	1350	1283	1512	1512	1512	1411
PO2100	KVA	1900	1900	1900	1805	2128	2128	2128	1986
	KW	1520	1520	1520	1444	1702	1702	1702	1588
PO2250	KVA	2063	2063	2063	1959	2310	2310	2310	2155
	KW	1650	1650	1650	1568	1848	1848	1848	1724
PO2500	KVA	2250	2250	2250	2138	2520	2520	2520	2351
	KW	1800	1800	1800	1710	2016	2016	2016	1881
PO2750	KVA	2500	2500	2500	2375	2800	2800	2800	2613
	KW	2000	2000	2000	1900	2240	2240	2240	2090

* Consult factory for other voltages

Electrical Parameters

60Hz/1800RPM		Standard winding / Power factor 0.8							
Duty type / temp rise / ambient temp		Cont. / 125K / 40°C				Standby / 163K / 27°C			
Phase		3 Phases				3 Phases			
Voltage	Y	416V	440V	460V	480V	416V	440V	460V	480V
	Δ	240V				240V			
PO1700	KVA	1680	1797	1953	1953	1848	1977	2148	2148
	KW	1344	1438	1563	1563	1478	1581	1719	1719
PO1875	KVA	1814	1941	2109	2109	1995	2135	2320	2320
	KW	1451	1553	1688	1688	1596	1708	1856	1856
PO2100	KVA	2043	2185	2375	2375	2247	2404	2613	2613
	KW	1634	1748	1900	1900	1797	1923	2090	2090
PO2250	KVA	2217	2372	2578	2578	2439	2609	2836	2836
	KW	1774	1898	2063	2063	1951	2087	2269	2269
PO2500	KVA	2419	2588	2813	2813	2661	2846	3094	3094
	KW	1935	2070	2250	2250	2129	2277	2475	2475
PO2750	KVA	2688	2875	3125	3125	2956	3163	3438	3438
	KW	2150	2300	2500	2500	2365	2530	2750	2750

Moment of Inertia & Efficiency

Model	F8-2750	PO1700	PO1875	PO2100	PO2250	PO2500	PO2750
Moment of Inertia (single-bearing).J	kgm^2	37.189	42.451	45.689	50.505	57.478	62.689
50Hz 400V Efficiency (100% Load)	%	96.1	96.2	96.2	96.3	96.3	96.4
60Hz 440V Efficiency (100% Load)	%	96.2	96.3	95.3	96.4	96.4	96.4

* Consult factory for other voltages

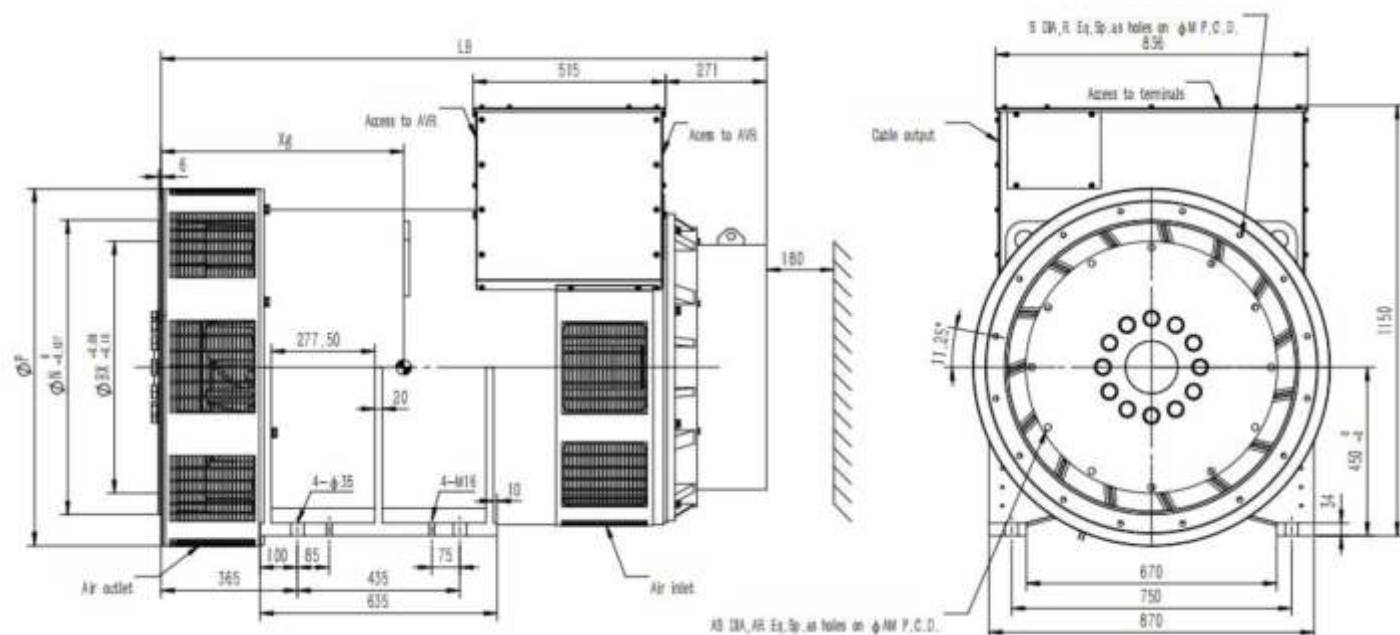
Reactance (%) - Time Constant (ms)

F8-2750	50Hz @ 400V	PO1700	PO1875	PO2100	PO2250	PO2500	PO2750
Kcc	Short circuit ratio	0.25	0.29	0.25	0.27	0.22	0.24
Xd	Direct axis synchronous unsaturated reactance	403	346	394	375	457	424
X'd	Direct Axis Transient Saturation Reactance	26.6	22.8	23.7	22.4	26.9	25.0
X''d	Direct Axis Subtransient Saturation Reactance	19.5	16.7	16.9	15.9	18.9	17.5
Xq	Quadrature axis synchronous unsaturated reactance	246	211	240	228	277	257
X''q	Quadrature Subtransient Saturation Reactance	26.6	22.5	23.9	22.4	26.8	24.7
X2	Negative sequence saturation reactance	2.31	1.96	2.04	1.91	2.29	2.11
X0	Zero sequence unsaturated reactance	1.84	1.56	1.28	1.23	1.43	1.41
T'd	Short-circuit transient time constant	52	39	40	35	39	33
T''d	Subtransient time constant	7	5	5	4	5	4
T'do	Open circuit time constant	2204	1665	1840	1609	1815	1547
Ta	Armature time constant	488	487	535	600	745	946

Reactance (%) - Time Constant (ms)

F8-2750	60Hz @ 440V	PO1700	PO1875	PO2100	PO2250	PO2500	PO2750
Kcc	Short circuit ratio	0.22	0.26	0.23	0.24	0.20	0.21
Xd	Direct axis synchronous unsaturated reactance	447	386	437	413	503	471
X'd	Direct Axis Transient Saturation Reactance	29.5	25.4	25.7	24.7	29.7	27.7
X''d	Direct Axis Subtransient Saturation Reactance	21.7	18.6	18.1	17.5	20.8	19.4
Xq	Quadrature axis synchronous unsaturated reactance	273	235	265	251	306	286
X''q	Quadrature Subtransient Saturation Reactance	29.5	25.2	25.9	24.7	29.6	27.4
X2	Negative sequence saturation reactance	2.56	2.19	2.20	2.11	2.52	2.34
X0	Zero sequence unsaturated reactance	2.04	1.75	1.44	1.35	1.57	1.55
T'd	Short-circuit transient time constant	48	37	36	32	35	30
T''d	Subtransient time constant	6	5	5	4	4	4
T'do	Open circuit time constant	2447	1859	2041	1770	2000	1718
Ta	Armature time constant	452	475	480	571	708	851

Outline Drawing (Single Bearing)



DIMENSION (MM)

Model	LB	*Xg	Weight	Package
	mm	mm	kg	L x W x H (mm)
PO1700	1497	645	2854	1730*1050*1370
PO1875	1607	683	3085	1800*1050*1370
PO2100	1607	700	3140	1800*1050*1370
PO2250	1687	740	3471	1950*1050*1370
PO2500	1767	780	3804	2030*1050*1370
PO2750	1862	828	4566	2150*1050*1370

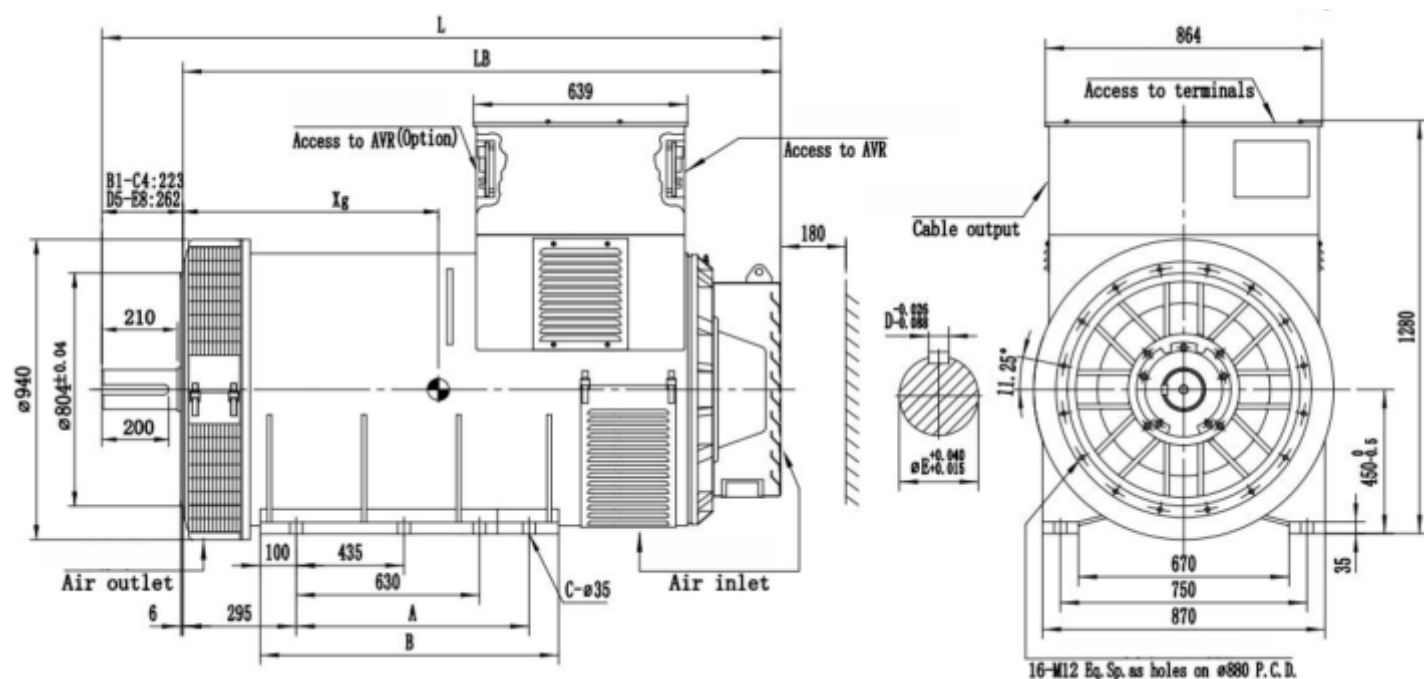
FRONT COVER (MM)

S.A.E	P	N	M	R-øS	W	a°
#00	954	787.3	850.9	16 - ø14	6	11.25°
#0	954	647.7	679.45	16 - ø14	6	11.25°

COUPLING (MM)

S.A.E	BX	AM	AR-øAS	AH
#18	571.5	542.9	6 - ø17	15.7
#21	673.1	641.35	12 - ø17	0
#24	733.3	692	12 - ø21	0

Outline Drawing (Double Bearing)



DIMENSION (MM)

Model	L	LB	*Xg	A	B	C	D	E	Weight	Package
	mm	mm	mm	mm	mm	mm	mm	mm	kg	L x W x H (mm)
PO1700	1857	1634	696	--	830	6	32	125	2879	1930*1050*1350
PO1875	2007	1784	735	--	830	6	32	125	3110	2000*1050*1350
PO2100	2007	1784	748	--	830	6	32	125	3165	2000*1050*1350
PO2250	2132	1870	843	800	1000	8	36	150	3496	2150*1050*1350
PO2500	2132	1870	868	800	1000	8	36	150	3829	2230*1050*1350
PO2750	2247	1980	878	800	1000	8	36	150	4591	2350*1050*1350