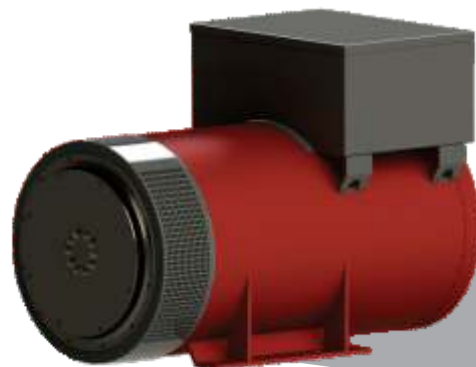


Application and Standard

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: F6-825 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	
PO550	KVA	500	500	500	475	560	560	560	523
	KW	400	400	400	380	448	448	448	418
PO625	KVA	563	563	563	534	630	630	630	588
	KW	450	450	450	428	504	504	504	470
PO660	KVA	600	600	600	570	672	672	672	627
	KW	480	480	480	456	538	538	538	502
PO700	KVA	625	625	625	594	700	700	700	653
	KW	500	500	500	475	560	560	560	523
PO750	KVA	675	675	675	641	756	756	756	705
	KW	540	540	540	513	605	605	605	564
PO770	KVA	700	700	700	665	784	784	784	732
	KW	560	560	560	532	627	627	627	585
PO825	KVA	750	750	750	713	840	840	840	784
	KW	600	600	600	570	672	672	672	627

* 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			
PO550	KVA	538	575	625	625	591	633	688	688
	KW	430	460	500	500	473	506	550	550
PO625	KVA	605	647	703	703	665	712	773	773
	KW	484	518	563	563	532	569	619	619
PO660	KVA	645	690	750	750	710	759	825	825
	KW	516	552	600	600	568	607	660	660
PO700	KVA	672	719	781	781	739	791	859	859
	KW	538	575	625	625	591	633	688	688
PO750	KVA	726	776	844	844	798	854	928	928
	KW	581	621	675	675	639	683	743	743
PO770	KVA	753	805	875	875	828	886	963	963
	KW	602	644	700	700	662	708	770	770
PO825	KVA	806	863	938	938	887	949	1031	1031
	KW	645	690	750	750	710	759	825	825

Moment of Inertia & Efficiency

Model	F6-825	PO550	PO625	PO660	PO700	PO750	PO770	PO825
Moment of Inertia (single-bearing).J	kgm ²	7.599	7.981	8.278	8.811	9.520	9.782	10.272
50Hz 400V Efficiency (100% Load)	%	95.3	95.6	95.8	96.0	96.3	96.2	96.5
60Hz 440V Efficiency (100% Load)	%	95.5	95.4	95.8	96.1	96.4	96.3	96.5

* Consult factory for other voltages

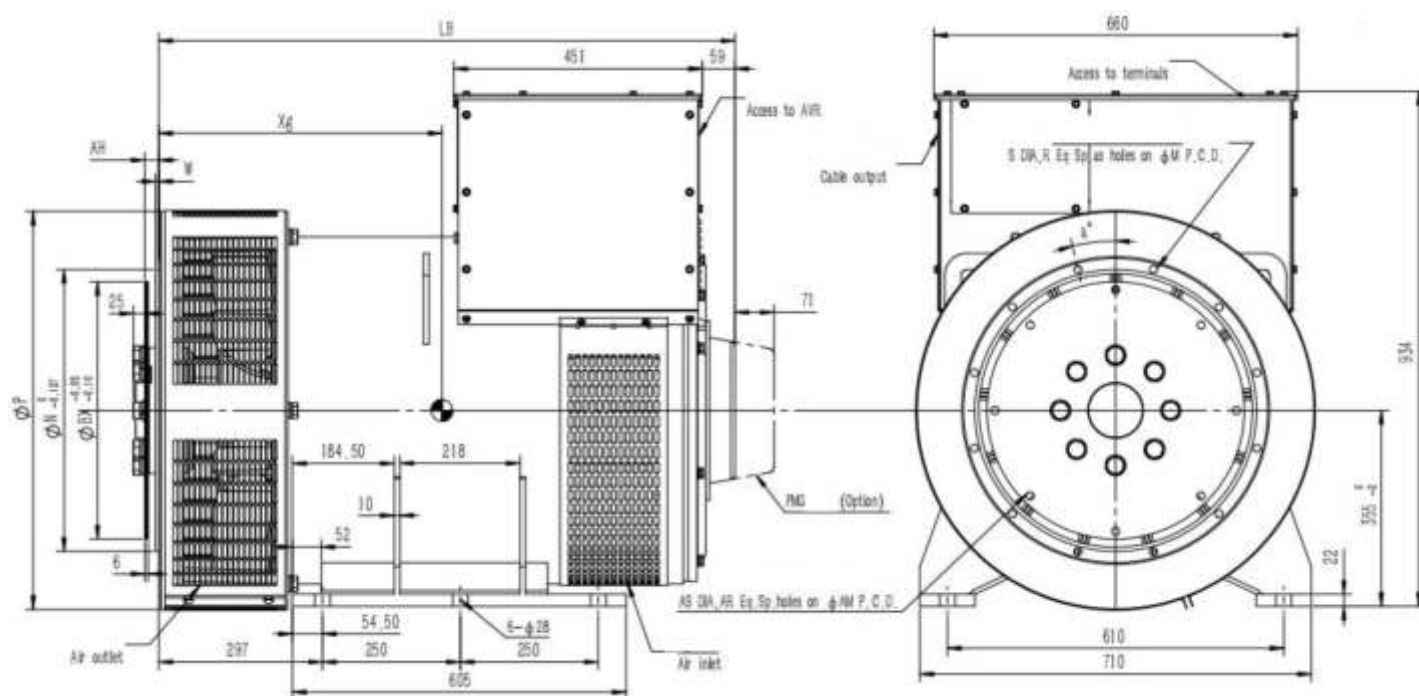
Reactance (%) - Time Constant (ms)

F6-825	50Hz @ 400V	PO550	PO625	PO660	PO700	PO750	PO770	PO825
Kcc	Short circuit ratio	0.25	0.27	0.24	0.26	0.28	0.27	0.24
Xd	Direct axis synchronous unsaturated reactance	404	372	410	388	356	369	419
X'd	Direct Axis Transient Saturation Reactance	25.4	23.5	25.1	23.4	21.3	22.1	25.0
X''d	Direct Axis Subtransient Saturation Reactance	17.5	16.1	17.1	15.8	14.3	14.9	16.7
Xq	Quadrature axis synchronous unsaturated reactance	238	220	242	229	209	217	246
X''q	Quadrature Subtransient Saturation Reactance	24.1	22.0	23.7	22.1	20.0	20.7	23.4
X2	Negative sequence saturation reactance	2.08	1.91	2.04	1.90	1.72	1.78	2.00
X0	Zero sequence unsaturated reactance	1.11	0.98	1.00	0.87	0.78	0.81	0.90
T'd	Short-circuit transient time constant	54	46	47	43	36	37	40
T''d	Subtransient time constant	7	6	6	5	4	5	5
T'do	Open circuit time constant	2390	2011	2152	1965	1653	1714	1870
Ta	Armature time constant	85	100	104	108	126	131	150

Reactance (%) - Time Constant (ms)

F6-825	60Hz @ 440V	PO550	PO625	PO660	PO700	PO750	PO770	PO825
Kcc	Short circuit ratio	0.21	0.23	0.20	0.22	0.25	0.23	0.20
Xd	Direct axis synchronous unsaturated reactance	481	444	488	462	407	439	498
X'd	Direct Axis Transient Saturation Reactance	30.2	30.3	29.9	27.8	24.5	26.3	29.7
X''d	Direct Axis Subtransient Saturation Reactance	20.8	19.9	20.3	18.8	16.4	17.7	19.9
Xq	Quadrature axis synchronous unsaturated reactance	283	262	288	272	240	258	293
X''q	Quadrature Subtransient Saturation Reactance	28.7	26.2	28.2	26.3	22.9	24.7	27.8
X2	Negative sequence saturation reactance	2.48	2.31	2.43	2.26	1.97	2.12	2.38
X0	Zero sequence unsaturated reactance	1.32	1.17	1.19	1.04	0.90	0.97	1.07
T'd	Short-circuit transient time constant	54	17	47	42	34	37	40
T''d	Subtransient time constant	7	2	6	5	4	5	5
T'do	Open circuit time constant	2844	834	2561	2339	1894	2039	2226
Ta	Armature time constant	84	101	103	107	120	130	149

Outline Drawing (Single Bearing)



DIMENSION (MM)

Model	LB	*Xg	Weight	Package
	mm	mm	kg	L x W x H (mm)
PO550	1037	495	1096	1237*846*1170
PO625	1092	523	1146	1337*846*1170
PO660	1137	533	1175	1337*846*1170
PO700	1137	545	1224	1337*846*1170
PO750	1197	575	1349	1432*846*1170
PO770	1197	575	1349	1432*846*1170
PO825	1227	590	1416	1432*846*1170

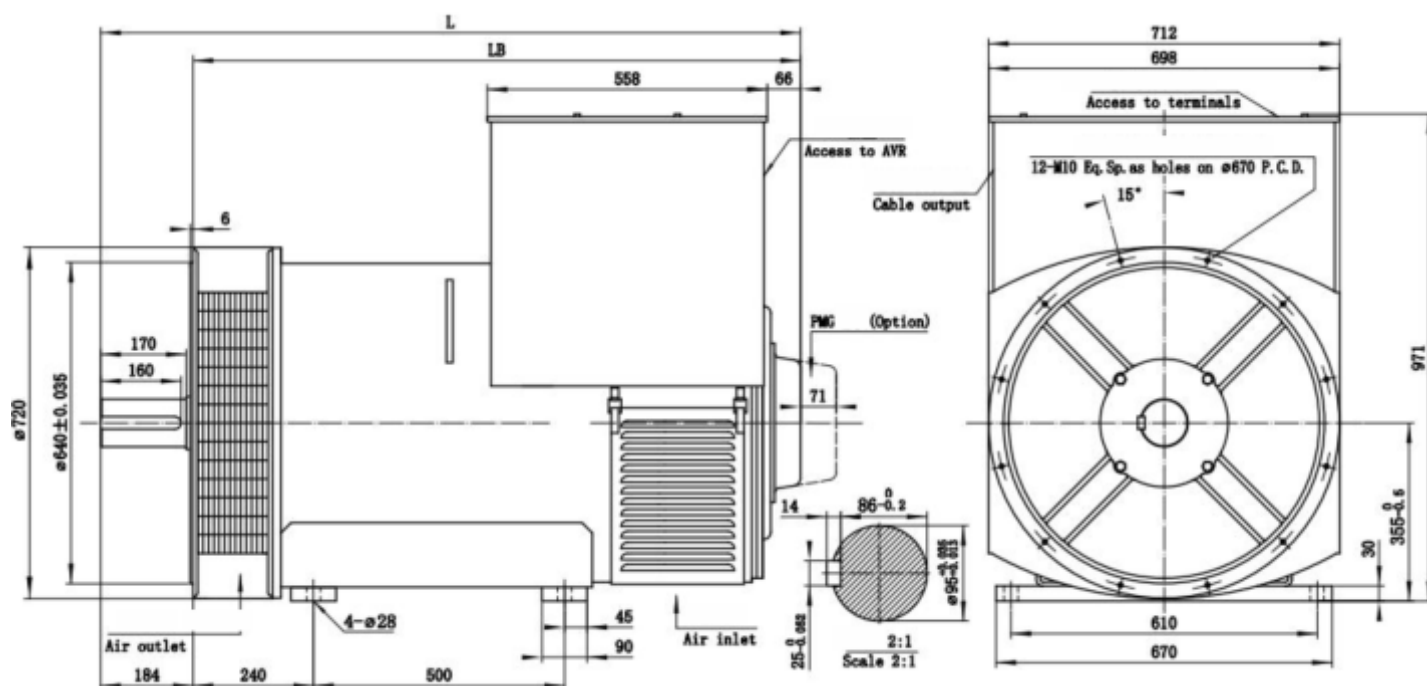
FRONT COVER (MM)

S.A.E	P	N	M	R-øS	W	a°
#00	882	787.4	850.9	16 - ø14	7	11.25°
#0	722	647.7	679.45	16 - ø14	6	11.25°
#1/2	722	584.2	619.125	12 - ø14	6	15°
#1	722	511.175	530.225	12 - ø12	6	15°

COUPLING (MM)

S.A.E	BX	AM	AR-øAS	AH
#14	466.725	438.15	8 - ø14	25.40
#18	571.5	542.925	6 - ø17	15.7
#21	673.1	641.35	12 - ø18	0

Outline Drawing (Double Bearing)



DIMENSION (MM)

Model	L	LB	*Xg	Weight	Package
	mm	mm	mm	kg	L x W x H (mm)
PO550	1393	1209	518	1111	1387*846*1130
PO625	1393	1209	528	1161	1487*846*1130
PO660	1393	1209	538	1190	1487*846*1130
PO700	1393	1209	548	1239	1487*846*1130
PO750	1468	1284	563	1364	1582*846*1130
PO770	1468	1284	573	1364	1582*846*1130
PO825	1468	1284	583	1431	1582*846*1130