

BRUSHLESS ASYNCHRONOUS ALTERNATORS

ETA354 SERIES

(50/60Hz, 4 Pole, 450.0KVA up to 750.0KVA
with AVR)



www.enetra.it

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Application & 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 various applications.

Alternators are in compliance to the main domestic and international standards and regulations: GB755, BS5000, IEC60034, VDE0530, CSAC22.2-100, NEMAMG-1.22. Alternators' manufacturing, design and mark are carried out in the environment of ISO9001.

Electrical Features

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.

Overload Acceptance

4 pole alternators can be overloaded according to NEMA.

Frequency

The standard winding (B31) is suitable both for 50Hz and 60Hz.

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...).

Single-phase Operation

354 series 4 pole alternators can be connected for single phase use.

Overspeed

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

Electrical Data

Insulation class	H
Wires	3Phase - 6 wires
Excitation system	Brushless
Voltage regulator type	AVR KR440
Voltage regulation accuracy	+/- 1%

Short circuit distortion	300%
Total harmonic distortion	<5% (at no or linear load)
Telephone harmonic factor	<2%
Winding pitch	2/3
Power factor (cose)	0.8 / 1.0

Mechanical Features

Bearings

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. Sealed for life bearings.

Balancing

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

Mechanical Structure

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

Insulation & Protection

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.

Direction of Rotation

Clockwise, but can operate in both directions.

Terminal Box & 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 with in the box.

Enclosure

Standard enclosure is IP23.

Ratings & Efficiencies

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		Ratings							Efficiency	Inertia	
Excitation	Cont. 125K/40°C				St. By 163K/27°C				50Hz, 400V at 100% Load	1-Bearing - J	
50Hz / 1500rpm	3 Phase				3 Phase						
Voltage (Y)	380	400	415	440	380	400	415	440			
Voltage (Δ)	220	230	240		220	230	240				
Type	KVA / kW				KVA / kW				%	Kgm ²	
ETA354A1	450.0	450.0	450.0	428.0	504.0	504.0	504.0	470.0	95.0	6.639	
	360.0	360.0	360.0	342.0	403.0	403.0	403.0	376.0			
ETA354B1	500.0	500.0	500.0	475.0	560.0	560.0	560.0	523.0	95.3	7.599	
	400.0	400.0	400.0	380.0	448.0	448.0	448.0	418.0			
ETA354C2	563.0	563.0	563.0	534.0	630.0	630.0	630.0	588.0	95.6	7.981	
	450.0	450.0	450.0	428.0	504.0	504.0	504.0	470.0			
ETA354D3	600.0	600.0	600.0	570.0	672.0	672.0	672.0	672.0	95.8	8.278	
	480.0	480.0	480.0	456.0	538.0	538.0	538.0	502.0			
ETA354E3	625.0	625.0	625.0	594.0	700.0	700.0	700.0	653.0	96.0	8.811	
	500.0	500.0	500.0	475.0	560.0	560.0	560.0	523.0			
ETA354F4	675.0	675.0	675.0	641.0	756.0	756.0	756.0	705.0	96.3	9.520	
	540.0	540.0	540.0	513.0	605.0	605.0	605.0	564.0			
ETA354G4	700.0	700.0	700.0	665.0	784.0	784.0	784.0	732.0	96.2	9.782	
	560.0	560.0	560.0	532.0	627.0	627.0	627.0	585.0			
ETA354H5	750.0	750.0	750.0	713.0	840.0	840.0	840.0	784.0	96.5	10.272	
	600.0	600.0	600.0	570.0	672.0	672.0	672.0	627.0			
60Hz / 1800rpm		3 Phase				3 Phase				60Hz, 440V at 100% Load	1-Bearing - J
Voltage (Y)	416	440	460	480	416	440	460	480			
Voltage (Δ)	240				240						
Type	KVA / kW				KVA / kW				%		
ETA354A1	484.0	518.0	540.0	540.0	532.0	569.0	594.0	594.0	95.4	6.639	
	387.0	414.0	432.0	432.0	426.0	455.0	475.0	475.0			
ETA354B1	538.0	575.0	600.0	600.0	591.0	633.0	660.0	660.0	95.5	7.599	
	430.0	460.0	480.0	480.0	473.0	506.0	528.0	528.0			
ETA354C2	605.0	647.0	675.0	675.0	665.0	712.0	743.0	743.0	95.4	7.981	
	484.0	518.0	540.0	540.0	532.0	569.0	594.0	594.0			
ETA354D3	645.0	690.0	720.0	720.0	710.0	759.0	792.0	792.0	95.8	8.278	
	516.0	552.0	576.0	576.0	568.0	607.0	634.0	634.0			
ETA354E3	672.0	719.0	750.0	750.0	739.0	791.0	825.0	825.0	96.1	8.811	
	538.0	575.0	600.0	600.0	591.0	633.0	660.0	660.0			
ETA354F4	726.0	776.0	810.0	810.0	798.0	854.0	891.0	891.0	96.4	9.520	
	581.0	621.0	648.0	648.0	639.0	683.0	713.0	713.0			
ETA354G4	753.0	805.0	840.0	840.0	828.0	886.0	924.0	924.0	96.3	9.782	
	602.0	644.0	672.0	672.0	662.0	708.0	739.0	739.0			
ETA354H5	806.0	863.0	900.0	900.0	887.0	949.0	990.0	990.0	96.5	10.272	
	645.0	690.0	720.0	720.0	710.0	759.0	792.0	792.0			

1. Enetra reserve the right to change the specifications of their products without notice as ongoing process of development.
2. Consult Enetra for further information.
3. Only 12 wire alternator can be realized, for other voltages please consult Enetra.
4. **General Parameters:** Cooling method: IC01 | THD=2.5% | TIF=50 | Altitude: 1,000m | Temperature Rise: 125K | Ambient Temperature: 40°C

*LFLT-014 - rev 07/2024 / **The information contained in this datasheet may change without notice.

Reactance & Time Constant

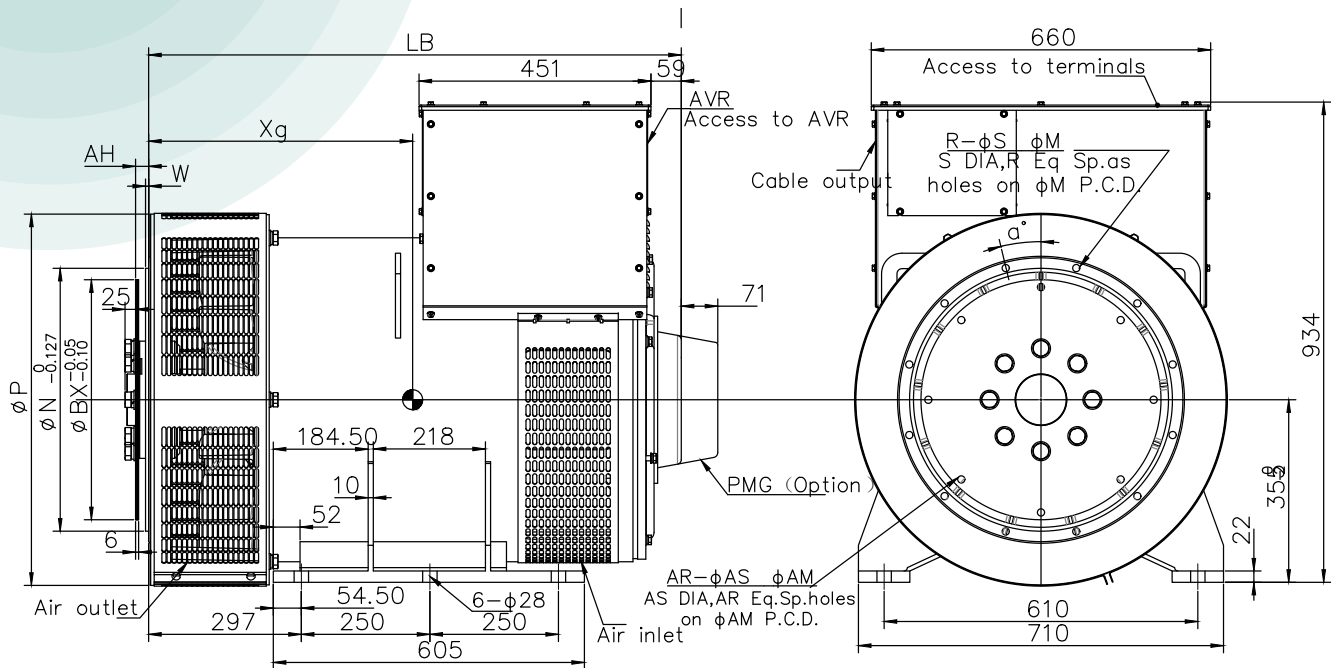
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Type	Rating (50Hz) Cont./125K/ 40°C/0.8/400V	Reactance								Time Constant			
		Kcc	Xd	X'd	X''d	Xq	X''q	X2	X0	T'd	T''d	T'do	Ta
	KVA	%	%	%	%	%	%	%	%	ms	ms	ms	ms
ETA354A1	450.0	0.22	444.0	28.4	19.7	262.0	27.1	2.34	1.30	64.0	8.0	2795.0	72.0
ETA354B1	500.0	0.25	404.0	25.4	17.5	238.0	24.1	2.08	1.11	54.0	7.0	2390.0	85.0
ETA354C2	563.0	0.27	372.0	23.5	16.1	220.0	22.0	1.91	0.98	46.0	6.0	2011.0	100.0
ETA354D3	600.0	0.24	410.0	25.1	17.1	242.0	23.7	2.04	1.00	47.0	6.0	2152.0	104.0
ETA354E3	625.0	0.26	388.0	23.4	15.8	229.0	22.1	1.90	0.87	43.0	5.0	1965.0	108.0
ETA354F4	675.0	0.28	356.0	21.3	14.3	209.0	20.0	1.72	0.78	36.0	4.0	1653.0	126.0
ETA354G4	700.0	0.27	369.0	22.1	14.9	217.0	20.7	1.78	0.81	37.0	5.0	1714.0	131.0
ETA354H5	750.0	0.24	419.0	25.0	16.7	246.0	23.4	2.0	0.90	40.0	5.0	1870.0	150.0

Type	Rating (60Hz) Cont./125K/ 40°C/0.8/440V	Reactance								Time Constant			
		Kcc	Xd	X'd	X''d	Xq	X''q	X2	X0	T'd	T''d	T'do	Ta
	KVA	%	%	%	%	%	%	%	%	ms	ms	ms	ms
ETA354A1	484.0	0.19	529.0	33.8	23.5	312.0	32.2	2.78	1.55	64.0	8.0	3326.0	72.0
ETA354B1	538.0	0.21	481.0	30.2	20.8	283.0	28.7	2.48	1.32	54.0	7.0	2844.0	84.0
ETA354C2	605.0	0.23	444.0	30.3	19.9	262.0	26.2	2.31	1.17	47.0	2.0	834.0	101.0
ETA354D3	645.0	0.20	488.0	29.9	20.3	288.0	28.2	2.43	1.19	47.0	61.0	2561.0	103.0
ETA354E3	672.0	0.22	462.0	27.8	18.8	272.0	26.3	2.26	1.04	42.0	5.0	2339.0	107.0
ETA354F4	726.0	0.25	407.0	24.5	16.4	240.0	22.9	1.97	0.90	34.0	4.0	1894.0	120.0
ETA354G4	753.0	0.23	439.0	26.3	17.7	258.0	24.7	2.12	0.97	37.0	5.0	2039.0	130.0
ETA354H5	806.0	0.20	498.0	29.7	19.9	293.0	27.8	2.38	1.07	40.0	5.0	2226.0	149.0

Dimensions & Weights

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Dimensions & Weights						
	LB	*Xg	Weight	Package (m)		
	mm	mm	Kg	Length	Width	Height
ETA354A1	1037.0	478.0	1073.0	1237.0	846.0	1170.0
ETA354B1	1037.0	495.0	1096.0	1237.0	846.0	1170.0
ETA354C2	1092.0	523.0	1174.0	1337.0	846.0	1170.0
ETA354D3	1137.0	533.0	1229.0	1337.0	846.0	1170.0
ETA354E3	1137.0	545.0	1257.0	1337.0	846.0	1170.0
ETA354F4	1197.0	575.0	1349.0	1432.0	846.0	1170.0
ETA354G4	1197.0	575.0	1372.0	1432.0	846.0	1170.0
ETA354H5	1227.0	590.0	1416.0	1432.0	846.0	1170.0

Flange (mm)						
SAE #	P	N	M	R- ϕS	W	α°
00	882.0	787.400	850.900	16- $\phi 14$	7.0	11.25 $^\circ$
0	722.0	647.700	679.450	16- $\phi 14$	6.0	11.25 $^\circ$
1/2	722.0	584.200	619.125	12- $\phi 14$	6.0	15.00 $^\circ$
1	722.0	511.175	530.225	12- $\phi 12$	6.0	15.00 $^\circ$

Coupling Disc (mm)				
SAE #	BX	AM	AR- ϕAS	AH
14.0	466.725	438.15	8- $\phi 14$	25.4
18.0	571.5	542.925	6- $\phi 17$	15.7
21.0	673.1	641.35	12- $\phi 18$	0.0