

BRUSHLESS ASYNCHRONOUS ALTERNATORS

ETA314 SERIES

(50/60Hz, 4 Pole, 250.0KVA up to 450.0KVA
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

314 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 SX440
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			
Voltage (YY)				220				220		
Type	KVA / kW				KVA / kW				%	Kgm²
ETA314A1	250.0	250.0	250.0	238.0	280.0	280.0	280.0	261.0	94.1	3.469
	200.0	200.0	200.0	190.0	224.0	224.0	224.0	209.0		
ETA314B1	275.0	275.0	275.0	261.0	308.0	308.0	308.0	287.0	94.5	3.745
	220.0	220.0	220.0	209.0	246.0	246.0	246.0	230.0		
ETA314C2	300.0	300.0	300.0	285.0	336.0	336.0	336.0	314.0	94.4	3.941
	240.0	240.0	240.0	228.0	269.0	269.0	269.0	251.0		
ETA314D2	313.0	313.0	313.0	297.0	350.0	350.0	350.0	327.0	94.5	4.225
	250.0	250.0	250.0	238.0	280.0	280.0	280.0	261.0		
ETA314E2	325.0	325.0	325.0	309.0	364.0	364.0	364.0	340.0	94.5	4.206
	260.0	260.0	260.0	247.0	291.0	291.0	291.0	272.0		
ETA314F3	350.0	350.0	350.0	333.0	392.0	392.0	392.0	366.0	94.7	4.628
	280.0	280.0	280.0	266.0	314.0	314.0	314.0	293.0		
ETA314G3	375.0	375.0	375.0	356.0	420.0	420.0	420.0	392.0	94.7	4.962
	300.0	300.0	300.0	285.0	336.0	336.0	336.0	314.0		
ETA314H4	400.0	400.0	400.0	380.0	448.0	448.0	448.0	418.0	94.8	5.439
	320.0	320.0	320.0	304.0	358.0	358.0	358.0	334.0		
ETA314K5	450.0	450.0	450.0	428.0	504.0	504.0	504.0	470.0	94.9	6.071
	360.0	360.0	360.0	342.0	403.0	403.0	403.0	376.0		
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									
Voltage (YY)	208	220	230	240	208	220	230	240		
Type	KVA / kW				KVA / kW				%	Kgm²
ETA314A1	269.0	288.0	300.0	300.0	296.0	316.0	330.0	330.0	94.3	3.469
	215.0	230.0	240.0	240.0	237.0	253.0	264.0	264.0		
ETA314B1	296.0	316.0	330.0	330.0	325.0	348.0	363.0	363.0	94.6	3.745
	237.0	253.0	264.0	264.0	260.0	278.0	290.0	290.0		
ETA314C2	323.0	345.0	360.0	360.0	355.0	380.0	396.0	396.0	94.4	3.941
	258.0	276.0	288.0	288.0	284.0	304.0	317.0	317.0		
ETA314D2	336.0	359.0	375.0	375.0	370.0	395.0	413.0	413.0	94.6	4.225
	269.0	288.0	300.0	300.0	296.0	316.0	330.0	330.0		
ETA314E2	349.0	374.0	390.0	390.0	384.0	411.0	429.0	429.0	94.6	4.206
	280.0	299.0	312.0	312.0	307.0	329.0	343.0	343.0		
ETA314F3	376.0	403.0	420.0	420.0	414.0	443.0	462.0	462.0	94.9	4.628
	301.0	322.0	336.0	336.0	331.0	354.0	370.0	370.0		
ETA314G3	403.0	431.0	450.0	450.0	443.0	474.0	495.0	495.0	94.9	4.962
	323.0	345.0	360.0	360.0	355.0	380.0	396.0	396.0		
ETA314H4	430.0	460.0	480.0	480.0	473.0	506.0	528.0	528.0	94.9	5.439
	344.0	368.0	384.0	384.0	378.0	405.0	422.0	422.0		
ETA314K5	484.0	518.0	540.0	540.0	532.0	569.0	594.0	594.0	94.7	6.071
	387.0	414.0	432.0	432.0	426.0	455.0	475.0	475.0		

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

*LFLT-013 - rev 07/2024 / **The information contained in this datasheet may change without notice.

Reactance & Time Constant

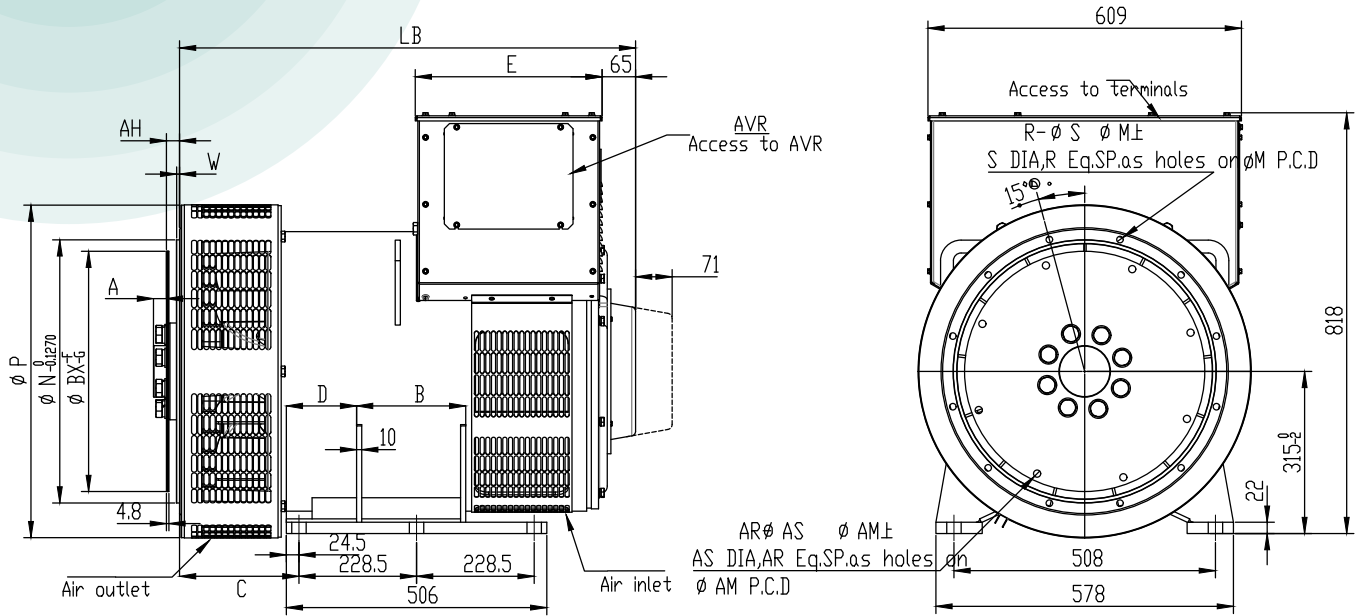
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Type	Rating (50Hz) Cont./125K/ 40°C/0.8/400V	Reactance								Time Constant			
		Kcc	Xd	X'd	X''d	Xq	X''q	X2	X0	T'd	T''d	T'do	Ta
	KVA	%	%	%	%	%	%	%	%	ms	ms	ms	ms
ETA314A1	250.0	0.24	418.0	27.9	18.8	240.0	24.9	2.19	1.22	103.0	13.0	4283.0	32.0
ETA314B1	275.0	0.22	462.0	31.9	21.8	265.0	27.9	2.49	1.44	111.0	14.0	4475.0	46.0
ETA314C2	300.0	0.25	393.0	25.5	16.9	225.0	22.5	1.97	1.00	84.0	11.0	3604.0	46.0
ETA314D2	313.0	0.24	424.0	27.3	18.1	243.0	24.1	2.11	1.06	88.0	11.0	3807.0	43.0
ETA314E2	325.0	0.22	455.0	29.2	19.3	261.0	25.7	2.25	1.11	93.0	12.0	4011.0	47.0
ETA314F3	350.0	0.25	401.0	26.8	17.9	230.0	23.1	2.05	1.08	79.0	10.0	3274.0	58.0
ETA314G3	375.0	0.23	431.0	27.7	18.2	247.0	24.0	2.11	1.03	80.0	10.0	3471.0	56.0
ETA314H4	400.0	0.25	399.0	25.0	16.2	228.0	21.8	1.90	0.85	68.0	9.0	3036.0	59.0
ETA314K5	450.0	0.24	418.0	27.9	18.8	240.0	24.9	2.19	1.22	103.0	13.0	4283.0	32.0

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
ETA314A1	269.0	0.22	462.0	31.9	21.8	265.0	27.9	2.49	1.44	111.0	14.0	4475.0	43.0
ETA314B1	296.0	0.18	549.0	38.0	25.9	316.0	33.3	2.96	1.72	110.0	14.0	5326.0	45.0
ETA314C2	323.0	0.21	468.0	30.0	20.1	268.0	26.8	2.35	1.19	83.0	10.0	4289.0	40.0
ETA314D2	336.0	0.20	504.0	32.5	21.5	289.0	28.7	2.51	1.26	88.0	11.0	4530.0	42.0
ETA314E2	349.0	0.18	541.0	34.8	23.0	310.0	30.6	2.68	1.32	92.0	11.0	4773.0	46.0
ETA314F3	376.0	0.21	477.0	31.9	21.3	274.0	27.5	2.44	1.29	78.0	10.0	3897.0	58.0
ETA314G3	403.0	0.19	534.0	34.1	22.4	306.0	29.5	2.59	1.25	80.0	10.0	4191.0	59.0
ETA314H4	430.0	0.21	475.0	29.7	19.3	273.0	25.9	2.26	1.01	67.0	8.0	3613.0	55.0
ETA314K5	484.0	0.19	524.0	33.1	21.4	296.0	28.5	2.49	1.15	80.0	10.0	4091.0	60.0

Dimensions & Weights

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Dimensions & Weights													
	A	B	C	D	F	G	LB	Xg	E	Weight	Package (m)		
	mm	mm	mm	mm			SAE1	SAE2&3	mm	Kg	Length	Width	Height
ETA314A1	25.2	212.0	232.0	136.5	0.05	0.10	886.0	395.0	353.0	660.0	9600	786.0	1060.0
ETA314B1	25.2	212.0	232.0	136.5	0.05	0.10	886.0	408.0	353.0	702.0	9600	786.0	1060.0
ETA314C2	25.0	270.0	199.0	118.5	0.06	0.10	936.0	423.0	383.0	741.0	10100	786.0	1060.0
ETA314D2	25.0	270.0	199.0	118.5	0.06	0.10	936.0	428.0	383.0	759.0	10100	786.0	1060.0
ETA314E2	25.0	270.0	199.0	118.5	0.06	0.10	936.0	433.0	383.0	721.0	10100	786.0	1060.0
ETA314F3	25.0	270.0	199.0	118.5	0.06	0.10	986.0	453.0	383.0	783.0	10900	786.0	1060.0
ETA314G3	25.0	270.0	199.0	118.5	0.06	0.10	986.0	458.0	383.0	801.0	10900	786.0	1060.0
ETA314H4	25.0	270.0	199.0	118.5	0.06	0.10	1021.0	475.0	383.0	875.0	10900	786.0	1060.0
ETA314K5	25.0	270.0	199.0	118.5	0.06	0.10	1081.0	505.0	383.0	983.0	11500	786.0	1060.0

Flange (mm)						
SAE #	P	N	M	R- ϕ S	W	α°
0	711.0	647.700	679.450	16- ϕ 14	6.0	11.25°
1/2	646.0	584.200	619.125	12- ϕ 14	6.0	15.00°
1	646.0	511.175	530.225	12- ϕ 12	6.0	15.00°

Coupling Disc (mm)				
SAE #	BX	AM	AR- ϕ AS	AH
11.5	352.425	333.380	8- ϕ 11	39.6
14	466.725	438.150	8- ϕ 14	25.4
18	571.500	542.925	6- ϕ 17	15.7