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Designed & Engineered in Italy

# BRUSHLESS AC SYNCHRONOUS ALTERNATORS

50Hz & 60Hz

E012

## INTRODUCTION



Enetra is a pioneering manufacturer in the design and production of energy efficient products as well as high-quality brushless AC synchronous alternators. Our commitment to innovation, reliability, and efficiency drives us to deliver cutting-edge solutions that power a wide range of applications globally.

By providing advanced alternator technologies that ensure optimal performance, durability, and sustainability; we aim to empower our clients with reliable power solutions that support their operational needs and contribute to a greener future.

We envision a world where our products are at the heart of sustainable and efficient energy systems, enhancing lives and businesses everywhere.

### Our Values

- **Innovation:** Continuously advancing our technologies to meet and exceed industry standards.
- **Quality:** Commitment to the highest standards of manufacturing excellence.
- **Customer Focus:** Prioritizing the needs and satisfaction of our clients.
- **Sustainability:** Promoting environmentally friendly practices and solutions.
- **Integrity:** Upholding the highest ethical standards in all our operations.

# KEY SUCCESS FACTORS

## 1- Technology and Innovation

Enetra invests significantly in research and development to stay at the forefront of alternator technology. Our state-of-the-art R&D facility is equipped with the latest tools and staffed by a team of highly skilled engineers and researchers dedicated to innovation and continuous improvement.



## 2- Quality Assurance

Quality is at the core of everything we do. Enetra's manufacturing processes adhere to strict quality control standards, ensuring that each alternator we produce meets the highest levels of performance and reliability. Our facilities are ISO-certified, reflecting our commitment to excellence and customer satisfaction.



## 3- Sustainability

At Enetra, we are committed to sustainable practices. Our alternators are designed to be energy-efficient and environmentally friendly. We strive to minimize our ecological footprint through responsible manufacturing processes, energy-saving technologies, and promoting the use of renewable energy sources.

## 4- Global Reach

Enetra has a broad international presence, serving clients across multiple continents. Our global distribution network ensures that our products are available wherever they are needed, supported by a comprehensive after-sales service program.

## 5- Customer Support

Our dedicated customer support team is available to assist with all inquiries, from product selection to installation and maintenance. We offer extensive technical support and training programs to ensure our clients get the most out of their Enetra alternators.

# CONTENT

## BRUSHLESS AC SYNCHRONOUS ALTERNATORS

50Hz & 60 Hz

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## RATING DEFINITION

This catalogue is a summary of ratings for the range at the most common voltages around the world. For other voltages, please consult ENETRA.

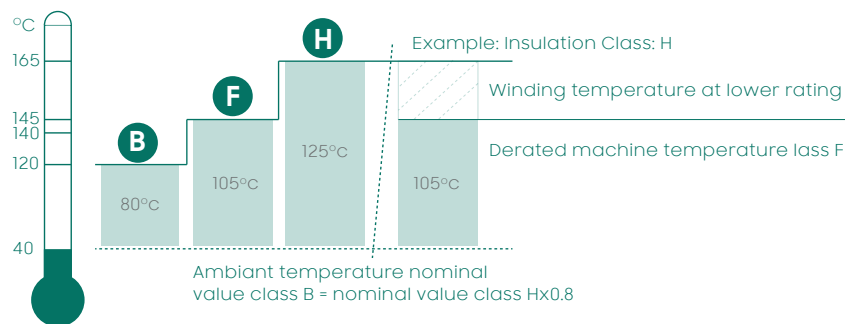
**Continuous Rating S1 / 40°C IEC60034-1 Definition:**  
Running at constant load limited to the insulation class; permissible overload 1h every 12 hours.

**Stand-By Rating at 40°C:**  
Running at constant load without overload, for a limited duration of maximum 500h/year, with a permissible increase of the temperature rise above class H.

**Stand-By Rating at 27°C:**  
Same conditions than stand-by duty 40°C but with acceptance of a lower ambient temperature (27°C) that allows to increase the rating and the temperature rise for the same level of temperature in the alternator.

Ex: S1/40°C = 100 kW - std by/40°C = 105 kW - std by/27°C= 110 kW

## INSULATION CLASS & TEMPERATURE RISE



## DERATING

AMBIANT TEMPERATURE						
Altitude	25°C	40°C	45°C	50°C	55°C	60°C *
0 - 1000m	1.05	1.00	0.97	0.94	0.91	0.88
1001 - 1500m	1.02	0.97	0.94	0.91	0.88	0.85
1501 - 2000m	0.99	0.94	0.91	0.88	0.86	0.83
2001 - 2500m	0.96	0.91	0.88	0.86	0.83	0.80
2501 - 3000m	0.92	0.88	0.85	0.83	0.80	0.77
3001 - 3500m	0.89	0.85	0.82	0.80	0.77	0.75
3501 - 4000m	0.86	0.82	0.80	0.77	0.75	0.72
4001 - 4500m	0.83	0.79	0.77	0.74	0.72	0.70
POWER FACTOR						
Lagging Power	1.0	0.9	0.8	0.7	0.6	
Factor	1.0	1.0	1.0	1.0	1.0	

(\*) External A.V.R. if  $\geq 56^\circ\text{C}$



## WINDING

ENETRA proposes various 2/3 pitch windings for rating optimisation according to the required voltage and frequency:

- Standard winding :B31
- 1 Phase winding :D51; D61 (dedicated single phase windings)

## GENERAL FEATURES

### Compliance with Internationally Recognized Standards

The 4 pole alternators are in compliance to the main international standards and regulations: GB755, BS500, IEC 60034, VDE0530, CSA C22.2 100, NEMA MG1.22

Alternators are designed, manufactured and marketed in an ISO 9001 environments.

### Electrical Features

**Excitation Systems:** Short circuit capacity ENETRA propose a large choice of excitation systems depending on the customer needs:

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

**Voltage regulators:** The 4 pole Alternators are fitted with reliable and performant AVR's, adapted to ENETRA excitation systems, powered by transistors and fulfilling perfect regulation. Available excitation systems depending on alternator frames, are indicated in rating tables.

ALTERNATORS	164	184	224	274	314	354	404	454
Shunt (1 Phase & 3 Phase)	SX460	SX460	SX460	SX460	SX460	-	-	-
	SX460F	SX460F	SX460F	-	-	-	-	-
Shunt (1 Phase)	SX460	SX460	SX460*	SX460*	SX460*	SX460*	-	-
Shunt (3 Phase ; 12 Wires)	-	-	SX460	SX460	SX460	SX460	SX460	SX460
	-	-	MX341*	MX341*	MX341*	MX341*	MX341*	MX341*
Shunt (3Phase ; 6 Wires)	-	-	MX341B*	MX341B*	MX341B*	MX341B*	MX341B*	MX341B*

\*Optional.  
Note: AVRs for parallel: SX440, KR440, AS440, MX341B, MX341 and MX321.

**Frequency:** The 4 pole alternators may operate either 50 or 60 Hz. The standard winding (B31) is suitable both for 50 or 60 Hz. For dedicated windings, see specific table or consult factory.

**Power Factor:** The 4 pole alternators are designed to operate between 0.8 and 1 power factor. A derating is necessary below 0.8 power factor (see derating chart).

**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:** The 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.

**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.

**Single Phase Operation:** The 4 pole alternators from ETA164 up to ETA314 can be reconnected for single phase use 12 wires only. The single phase rating is given in the various alternator date sheets alternator form. ETA164 up to ETA274 can be supplied with a dedicated single phase winding (D51/ D61).

## Mechanical Features

**Mechanical Arrangement:** The 4 pole alternators can be provided in single or two bearings configurations. A large range of engine adaptors and coupling discs are available to fit the major engines.

**Enclosure:** Standard enclosure is IP23.

**Direction of Rotation:** The 4 pole alternators from 164 up to 354 can operate in both directions; 404, 454 are only available for clockwise running. (see from D.E.).

**Overspeed:** The maximum overspeed is 2250 rpm(1.25 times the 60 Hz rated speed).

**Mechanical Structure:** Steel frame. Aluminium, cast iron or steel housings and flanges depending on models.

**Balancing:** All the rotors are dynamically balanced according to ISO 1940 and IEC 60034-14. Two bearing rotors are balanced with a half key.

**Bearings:** Sealed for life bearings for all ENETRA 4 pole alternator.

**Insulation & Protection:** 4 pole alternators 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 harsh environments.

**Terminal Box & Connection:** 4 Pole alternators have a large terminal box which allows easy access for reconnection or to the AVR. Current transformers and other optional modules can be fitted within the box.

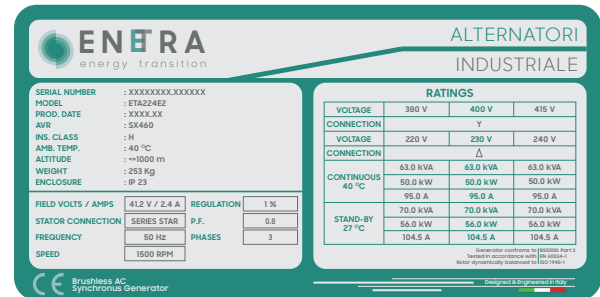
## ACCESSORIES & OPTIONS

- PMG (from ETA224)
- Engine adaptors for two bearing alternators
- Three-proofing lacquer for harsh environments
- Air inlet filters (5% derating)
- Air outlet filters or deflectors (5% derating)
- Specific painting
- Thermal protections for bearings
- Thermal protections for stator windings
- Anti condensation heaters (retrofitable)
- Remote voltage potentiometers
- Current transformers for paralleling with other alternators
- First emergency kits (AVR + diodes)



## PRODUCT DESCRIPTION

The machine name is defined according to various criteria (see below example of description for ETA224E2):



## CONNECTIONS 50Hz

4 POLE	50 Hz - 1500 rpm						
PHASE - CODE	3PH-D	3PH-F	3PH-D	3PH-F	3PH-A	3PH-FF	3PH-Z
CONNECTIONS							
	star	delta	star	delta	paralle star	double delta	open delta
Number of Wires	6	6	12	12	12	12	12
Standard Winding	380-400-415-	220-240V	380-400-415V	220-240V	190-208-220V	220-240V	220-240V
BI	440V (P7-10)	(P7-10)	(P7-10)	(P7-10)	(P7-10)	(P11)	(P11)

## CONNECTIONS 60Hz

4 POLE	50 Hz - 1500 rpm						
PHASE - CODE	3PH-D	3PH-F	3PH-D	3PH-F	3PH-A	3PH-FF	3PH-Z
CONNECTIONS							
	star	delta	star	delta	paralle star	double delta	open delta
Number of Wires	6	6	12	12	12	12	12
Standard Winding	380-480V	220-277V	380-480V	220-277V	208-240V	220-240V	220-240V
BI	(P21-24)	(P21-24)	(P21-24)	(P21-24)	(P21-24)	(P27)	(P27)

# BRUSHLESS AC SYNCHRONOUS ALTERNATORS

## STANDARD WINDING B31 ETA SERIES






**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**

Ratings 50Hz			
CONNECTIONS			
	star	delta	parallel star
Number of Wires	6 or 12	6 or 12	12
Standard Winding	380-400-415V	220-230-240V	190-200-208V

**Standard  
Winding B31**

Excitation				190V / 220V / 380V						200V / 230V / 400V						208V / 240V / 415V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA164A1	B31	-	12	6.5	8.1	6.9	8.6	7.2	8.9	6.5	8.1	6.9	8.6	7.2	8.9	6.5	8.1	6.9	8.6	7.2	8.9
ETA164B1	B31	-	12	8.8	11.0	9.3	11.7	9.9	12.5	8.8	11.0	9.3	11.7	9.9	12.5	8.8	11.0	9.3	11.7	9.9	12.5
ETA164C2	B31	-	12	10.8	13.5	11.4	14.3	12.1	15.1	10.8	13.5	11.4	14.3	12.1	15.1	10.8	13.5	11.4	14.3	12.1	15.1
ETA164D2	B31	-	12	12.8	16.0	13.6	17.0	14.3	17.9	12.8	16.0	13.6	17.0	14.3	17.9	12.8	16.0	13.6	17.0	14.3	17.9
ETA164E2	B31	-	12	14.0	17.5	14.8	18.6	15.7	19.6	14.0	17.5	14.8	18.6	15.7	19.6	14.0	17.5	14.8	18.6	15.7	19.6
ETA184A1	B31	-	12	16.0	20.0	17.0	21.2	17.9	22.4	16.0	20.0	17.0	21.2	17.9	22.4	16.0	20.0	17.0	21.2	17.9	22.4
ETA184B1	B31	-	12	18.0	22.5	19.1	23.9	20.0	25.0	18.0	22.5	19.1	23.9	20.0	25.0	18.0	22.5	19.1	23.9	20.0	25.0
ETA184C2	B31	-	12	20.0	25.0	21.2	26.5	22.4	28.0	20.0	25.0	21.2	26.5	22.4	28.0	20.0	25.0	21.2	26.5	22.4	28.0
ETA184D2	B31	-	12	22.0	27.5	23.3	29.2	24.6	30.8	22.0	27.5	23.3	29.2	24.6	30.8	22.0	27.5	23.3	29.2	24.6	30.8
ETA184E3	B31	-	12	25.0	31.3	26.5	33.1	28.0	35.0	25.0	31.3	26.5	33.1	28.0	35.0	25.0	31.3	26.5	33.1	28.0	35.0
ETA184F4	B31	-	12	28.0	35.0	29.7	37.1	31.4	39.2	28.0	35.0	29.7	37.1	31.4	39.2	28.0	35.0	29.7	37.1	31.4	39.2
ETA184G4	B31	-	12	30.0	37.5	31.8	39.8	33.6	42.0	30.0	37.5	31.8	39.8	33.6	42.0	30.0	37.5	31.8	39.8	33.6	42.0
ETA184H5	B31	-	12	32.0	40.0	33.9	42.4	35.8	44.8	32.0	40.0	33.9	42.4	35.8	44.8	32.0	40.0	33.9	42.4	35.8	44.8
ETA184K5	B31	-	12	34.0	42.5	36.0	45.1	38.0	47.6	34.0	42.5	36.0	45.1	38.0	47.6	34.0	42.5	36.0	45.1	38.0	47.6
ETA224A1	B31	option	6*	32.0	40.0	34.0	42.0	36.0	45.0	32.0	40.0	34.0	42.0	36.0	45.0	32.0	40.0	34.0	42.0	38.0	45.0
ETA224B1	B31	option	6*	34.0	43.0	36.0	45.0	38.0	48.0	34.0	43.0	36.0	45.0	38.0	48.0	34.0	43.0	36.0	45.0	45.0	48.0
ETA224C1	B31	option	6*	40.0	50.0	42.0	53.0	45.0	56.0	40.0	50.0	42.0	53.0	45.0	56.0	40.0	50.0	42.0	53.0	50.0	56.0
ETA224D2	B31	option	6*	45.0	56.0	48.0	60.0	50.0	63.0	45.0	56.0	48.0	60.0	50.0	63.0	45.0	56.0	48.0	60.0	56.0	63.0
ETA224E2	B31	option	6*	50.0	63.0	53.0	66.0	56.0	70.0	50.0	63.0	53.0	66.0	56.0	70.0	50.0	63.0	53.0	66.0	60.0	70.0
ETA224F3	B31	option	6*	54.0	68.0	57.0	72.0	60.0	76.0	54.0	68.0	57.0	72.0	60.0	76.0	54.0	68.0	57.0	72.0	65.0	76.0
ETA224G3	B31	option	6*	58.0	73.0	61.0	77.0	65.0	81.0	58.0	73.0	61.0	77.0	65.0	81.0	58.0	73.0	61.0	77.0	72.0	81.0
ETA224H4	B31	option	6*	64.0	80.0	68.0	85.0	72.0	90.0	64.0	80.0	68.0	85.0	72.0	90.0	64.0	80.0	68.0	85.0	76.0	90.0
ETA224K4	B31	option	6*	68.0	85.0	72.0	90.0	76.0	95.0	68.0	85.0	72.0	90.0	76.0	95.0	68.0	85.0	72.0	90.0	84.0	95.0
ETA224L5	B31	option	6*	75.0	94.0	80.0	99.0	84.0	105.0	75.0	94.0	80.0	99.0	84.0	105.0	75.0	94.0	80.0	99.0	90.0	105.0
ETA224M5	B31	option	6*	80.0	100.0	85.0	106.0	90.0	112.0	80.0	100.0	85.0	106.0	90.0	112.0	80.0	100.0	85.0	106.0	88.0	112.0
ETA274A1	B31	option	6*	80.0	100.0	85.0	106.0	90.0	112.0	80.0	100.0	85.0	106.0	90.0	112.0	80.0	100.0	85.0	106.0	90.0	112.0
ETA274B2	B31	option	6*	90.0	113.0	95.0	119.0	101.0	126.0	90.0	113.0	95.0	119.0	101.0	126.0	90.0	113.0	95.0	119.0	101.0	126.0
ETA274C2	B31	option	6*	100.0	125.0	106.0	133.0	112.0	140.0	100.0	125.0	106.0	133.0	112.0	140.0	100.0	125.0	106.0	133.0	112.0	140.0
ETA274D3	B31	option	6*	112.0	140.0	119.0	148.0	125.0	157.0	112.0	140.0	119.0	148.0	125.0	157.0	112.0	140.0	119.0	148.0	125.0	157.0
ETA274E3	B31	option	6*	120.0	150.0	127.0	159.0	134.0	168.0	120.0	150.0	127.0	159.0	134.0	168.0	120.0	150.0	127.0	159.0	134.0	168.0




**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**

Ratings 50Hz			
CONNECTIONS			
	star	delta	parallel star
Number of Wires	6 or 12	6 or 12	12
Standard Winding	380-400-415V	220-230-240V	190-200-208V

**Standard  
Winding B31**

Excitation				190V / 220V / 380V						200V / 230V / 400V						208V / 240V / 415V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA274F4	B31	option	6*	128.0	160.0	136.0	170.0	143.0	179.0	128.0	160.0	136.0	170.0	143.0	179.0	128.0	160.0	136.0	170.0	143.0	179.0
ETA274G4	B31	option	6*	140.0	175.0	148.0	186.0	157.0	196.0	140.0	175.0	148.0	186.0	157.0	196.0	140.0	175.0	148.0	186.0	157.0	196.0
ETA274H5	B31	option	6*	150.0	188.0	159.0	199.0	168.0	210.0	150.0	188.0	159.0	199.0	168.0	210.0	150.0	188.0	159.0	199.0	168.0	210.0
ETA274K5	B31	option	6*	160.0	200.0	170.0	212.0	179.0	224.0	160.0	200.0	170.0	212.0	179.0	224.0	160.0	200.0	170.0	212.0	179.0	224.0
ETA274L6	B31	option	6*	180.0	225.0	191.0	239.0	202.0	252.0	180.0	225.0	191.0	239.0	202.0	252.0	180.0	225.0	191.0	239.0	202.0	252.0
ETA274M7	B31	option	6*	200.0	250.0	212.0	265.0	224.0	280.0	200.0	250.0	212.0	265.0	224.0	280.0	200.0	250.0	212.0	265.0	224.0	280.0
ETA314A1	B31	option	6*	200.0	250.0	212.0	265.0	224.0	280.0	200.0	250.0	212.0	265.0	224.0	280.0	200.0	250.0	212.0	265.0	246.0	280.0
ETA314B1	B31	option	6*	220.0	275.0	233.0	292.0	246.0	308.0	220.0	275.0	233.0	292.0	246.0	308.0	220.0	275.0	233.0	292.0	269.0	308.0
ETA314C2	B31	option	6*	240.0	300.0	254.0	318.0	269.0	336.0	240.0	300.0	254.0	318.0	269.0	336.0	240.0	300.0	254.0	318.0	280.0	336.0
ETA314D2	B31	option	6*	250.0	313.0	265.0	331.0	280.0	350.0	250.0	313.0	265.0	331.0	280.0	350.0	250.0	313.0	265.0	331.0	291.0	350.0
ETA314E2	B31	option	6*	260.0	325.0	276.0	345.0	291.0	364.0	260.0	325.0	276.0	345.0	291.0	364.0	260.0	325.0	276.0	345.0	314.0	364.0
ETA314F3	B31	option	6*	280.0	350.0	297.0	371.0	314.0	392.0	280.0	350.0	297.0	371.0	314.0	392.0	280.0	350.0	297.0	371.0	336.0	392.0
ETA314G3	B31	option	6*	300.0	375.0	318.0	398.0	336.0	420.0	300.0	375.0	318.0	398.0	336.0	420.0	300.0	375.0	318.0	398.0	358.0	420.0
ETA314H4	B31	option	6*	320.0	400.0	339.0	424.0	358.0	448.0	320.0	400.0	339.0	424.0	358.0	448.0	320.0	400.0	339.0	424.0	403.0	448.0
ETA314K5	B31	option	6*	360.0	450.0	382.0	477.0	403.0	504.0	360.0	450.0	382.0	477.0	403.0	504.0	360.0	450.0	382.0	477.0	396.0	504.0
ETA354A1	B31	option	6*	360.0	450.0	382.0	477.0	403.0	504.0	360.0	450.0	382.0	477.0	403.0	504.0	360.0	450.0	382.0	477.0	403.0	504.0
ETA354B1	B31	option	6*	400.0	500.0	424.0	530.0	448.0	560.0	400.0	500.0	424.0	530.0	448.0	560.0	400.0	500.0	424.0	530.0	448.0	560.0
ETA354C2	B31	option	6*	450.0	563.0	477.0	596.0	504.0	630.0	450.0	563.0	477.0	596.0	504.0	630.0	450.0	563.0	477.0	596.0	504.0	630.0
ETA354D3	B31	option	6*	480.0	600.0	509.0	636.0	538.0	672.0	480.0	600.0	509.0	636.0	538.0	672.0	480.0	600.0	509.0	636.0	538.0	672.0
ETA354E3	B31	option	6*	500.0	625.0	530.0	663.0	560.0	700.0	500.0	625.0	530.0	663.0	560.0	700.0	500.0	625.0	530.0	663.0	560.0	700.0
ETA354F4	B31	option	6*	540.0	675.0	572.0	716.0	605.0	756.0	540.0	675.0	572.0	716.0	605.0	756.0	540.0	675.0	572.0	716.0	605.0	756.0
ETA354G4	B31	option	6*	560.0	700.0	594.0	742.0	627.0	784.0	560.0	700.0	594.0	742.0	627.0	784.0	560.0	700.0	594.0	742.0	627.0	784.0
ETA354H5	B31	option	6*	600.0	750.0	636.0	795.0	672.0	840.0	600.0	750.0	636.0	795.0	672.0	840.0	600.0	750.0	636.0	795.0	672.0	840.0
ETA404A1	B31	option	6*	600.0	750.0	636.0	795.0	660.0	825.0	600.0	750.0	636.0	795.0	660.0	825.0	600.0	750.0	636.0	795.0	704.0	825.0
ETA404B1	B31	option	6*	640.0	800.0	678.0	848.0	704.0	880.0	640.0	800.0	678.0	848.0	704.0	880.0	640.0	800.0	678.0	848.0	801.0	880.0
ETA404C2	B31	option	6*	728.0	910.0	772.0	965.0	801.0	1001.0	728.0	910.0	772.0	965.0	801.0	1001.0	728.0	910.0	772.0	965.0	880.0	1001.0
ETA404D2	B31	option	6*	800.0	1000.0	848.0	1060.0	880.0	1100.0	800.0	1000.0	848.0	1060.0	880.0	1100.0	800.0	1000.0	848.0	1060.0	990.0	1100.0
ETA404E3	B31	option	6*	900.0	1125.0	954.0	1193.0	990.0	1238.0	900.0	1125.0	954.0	1193.0	990.0	1238.0	900.0	1125.0	954.0	1193.0	1100.0	1238.0
ETA404F3	B31	option	6*	1000.0	1250.0	1060.0	1325.0	1100.0	1375.0	1000.0	1250.0	1060.0	1325.0	1100.0	1375.0	1000.0	1250.0	1060.0	1325.0	1210.0	1375.0
ETA404G4	B31	option	6*	1100.0	1375.0	1166.0	1458.0	1210.0	1513.0	1100.0	1375.0	1166.0	1458.0	1210.0	1513.0	1100.0	1375.0	1166.0	1458.0		1513.0

**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**



Ratings 50Hz			
CONNECTIONS			
	star	delta	paralle star
Number of Wires	6 or 12	6 or 12	12
Standard Winding	380-400-415V	220-230-240V	190-200-208V

**Standard  
Winding B31**

Excitation				190V / 220V / 380V						200V / 230V / 400V						208V / 240V / 415V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA404H4	B31	option	6*	1200.0	1500.0	1272.0	1590.0	1320.0	1650.0	1200.0	1500.0	1272.0	1590.0	1320.0	1650.0	1200.0	1500.0	1272.0	1590.0	1320.0	1650.0
ETA454A1	B31	option	6*	1120.0	1400.0	1187.0	1484.0	1232.0	1540.0	1120.0	1400.0	1187.0	1484.0	1232.0	1540.0	1120.0	1400.0	1187.0	1484.0	1232.0	1540.0
ETA454B1	B31	option	6*	1250.0	1563.0	1325.0	1656.0	1375.0	1719.0	1250.0	1563.0	1325.0	1656.0	1375.0	1719.0	1250.0	1563.0	1325.0	1656.0	1375.0	1719.0
ETA454C2	B31	option	6*	1350.0	1688.0	1431.0	1789.0	1485.0	1856.0	1350.0	1688.0	1431.0	1789.0	1485.0	1856.0	1350.0	1688.0	1431.0	1789.0	1485.0	1856.0
ETA454D2	B31	option	6*	1520.0	1900.0	1611.0	2014.0	1672.0	2090.0	1520.0	1900.0	1611.0	2014.0	1672.0	2090.0	1520.0	1900.0	1611.0	2014.0	1672.0	2090.0
ETA454E3	B31	option	6*	1650.0	2063.0	1749.0	2186.0	1815.0	2269.0	1650.0	2063.0	1749.0	2186.0	1815.0	2269.0	1650.0	2063.0	1749.0	2186.0	1815.0	2269.0
ETA454F4	B31	option	6*	1800.0	2250.0	1908.0	2385.0	1980.0	2475.0	1800.0	2250.0	1908.0	2385.0	1980.0	2475.0	1800.0	2250.0	1908.0	2385.0	1980.0	2475.0
ETA454G5	B31	option	6*	1900.0	2375.0	2014.0	2518.0	2090.0	2613.0	1900.0	2375.0	2014.0	2518.0	2090.0	2613.0	1900.0	2375.0	2014.0	2518.0	2090.0	2613.0
ETA454H5	B31	option	6*	2000.0	2500.0	2120.0	2650.0	2200.0	2750.0	2000.0	2500.0	2120.0	2650.0	2200.0	2750.0	2000.0	2500.0	2120.0	2650.0	2200.0	2750.0

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. (\*) Indicates that 12 wires can be selected as required.



**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**

Ratings 50Hz		
CONNECTIONS		
	star	parallel star
Number of Wires	6 or 12	12
Standard Winding	400V	220V

**Standard  
Winding B31**

Excitation				220V / 440V					
				cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA
ETA164A1	B31	-	12	6.2	7.7	6.5	8.2	6.8	8.5
ETA164B1	B31	-	12	8.4	10.5	8.9	11.1	9.2	11.5
ETA164C2	B31	-	12	10.3	12.8	10.9	13.6	11.3	14.1
ETA164D2	B31	-	12	12.2	15.2	12.9	16.1	13.4	16.7
ETA164E2	B31	-	12	13.3	16.6	14.1	17.6	14.6	18.3
ETA184A1	B31	-	12	15.2	19.0	16.1	20.1	16.7	20.9
ETA184B1	B31	-	12	17.1	21.4	18.1	22.7	18.8	23.5
ETA184C2	B31	-	12	19.0	23.8	20.1	25.2	20.9	26.1
ETA184D2	B31	-	12	20.9	26.1	22.2	27.7	23.0	28.7
ETA184E3	B31	-	12	23.8	29.7	25.2	31.5	26.1	32.7
ETA184F4	B31	-	12	26.6	33.3	28.2	35.2	29.3	36.6
ETA184G4	B31	-	12	28.5	35.6	30.2	37.8	31.4	39.2
ETA184H5	B31	-	12	30.4	38.0	32.2	40.3	33.4	41.8
ETA184K5	B31	-	12	32.3	40.4	34.2	42.8	35.5	44.4
ETA224A1	B31	option	6	30.0	38.0	32.0	40.0	33.0	42.0
ETA224B1	B31	option	6	32.0	40.0	34.0	43.0	36.0	44.0
ETA224C1	B31	option	6	38.0	48.0	40.0	50.0	42.0	52.0
ETA224D2	B31	option	6	43.0	53.0	45.0	57.0	47.0	59.0
ETA224E2	B31	option	6	48.0	59.0	50.0	63.0	52.0	65.0
ETA224F3	B31	option	6	51.0	64.0	54.0	68.0	56.0	71.0
ETA224G3	B31	option	6	55.0	69.0	58.0	73.0	61.0	76.0
ETA224H4	B31	option	6	61.0	76.0	64.0	81.0	67.0	84.0
ETA224K4	B31	option	6	65.0	81.0	68.0	86.0	71.0	89.0
ETA224L5	B31	option	6	71.0	89.0	76.0	94.0	78.0	98.0
ETA224M5	B31	option	6	76.0	95.0	81.0	101.0	84.0	105.0
ETA274A1	B31	option	6	76.0	95.0	81.0	101.0	84.0	105.0
ETA274B2	B31	option	6	86.0	107.0	91.0	113.0	94.0	118.0
ETA274C2	B31	option	6	95.0	119.0	101.0	126.0	105.0	131.0
ETA274D3	B31	option	6	106.0	133.0	113.0	141.0	117.0	146.0
ETA274E3	B31	option	6	114.0	143.0	121.0	151.0	125.0	157.0



**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**

Ratings 50Hz		
CONNECTIONS		
	star	paralle star
Number of Wires	6 or 12	12
Standard Winding	400V	220V

**Standard  
Winding B31**

Excitation				220V / 440V					
				cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA
ETA274F4	B31	option	6	122.0	152.0	129.0	161.0	134.0	167.0
ETA274G4	B31	option	6	133.0	166.0	141.0	176.0	146.0	183.0
ETA274H5	B31	option	6	143.0	178.0	151.0	189.0	1157.0	196.0
ETA274K5	B31	option	6	152.0	190.0	161.0	201.0	167.0	209.0
ETA274L6	B31	option	6	171.0	214.0	181.0	227.0	188.0	235.0
ETA274M7	B31	option	6	190.0	238.0	201.0	252.0	209.0	261.0
ETA314A1	B31	option	6	190.0	238.0	201.0	252.0	209.0	261.0
ETA314B1	B31	option	6	209.0	261.0	222.0	277.0	230.0	287.0
ETA314C2	B31	option	6	228.0	285.0	242.0	302.0	251.0	314.0
ETA314D2	B31	option	6	238.0	297.0	252.0	315.0	261.0	327.0
ETA314E2	B31	option	6	247.0	309.0	262.0	327.0	272.0	340.0
ETA314F3	B31	option	6	266.0	333.0	282.0	352.0	293.0	366.0
ETA314G3	B31	option	6	285.0	356.0	302.0	378.0	314.0	392.0
ETA314H4	B31	option	6	304.0	380.0	322.0	403.0	334.0	418.0
ETA314K5	B31	option	6	342.0	428.0	363.0	453.0	376.0	470.0
ETA354A1	B31	option	6	342.0	428.0	363.0	453.0	376.0	470.0
ETA354B1	B31	option	6	380.0	475.0	403.0	504.0	418.0	523.0
ETA354C2	B31	option	6	428.0	534.0	453.0	566.0	470.0	588.0
ETA354D3	B31	option	6	456.0	570.0	483.0	604.0	502.0	627.0
ETA354E3	B31	option	6	475.0	594.0	504.0	629.0	523.0	653.0
ETA354F4	B31	option	6	513.0	641.0	544.0	680.0	564.0	705.0
ETA354G4	B31	option	6	532.0	665.0	564.0	705.0	585.0	732.0
ETA354H5	B31	option	6	570.0	713.0	604.0	755.0	627.0	784.0
ETA404A1	B31	option	6	570.0	713.0	604.0	755.0	627.0	784.0
ETA404B1	B31	option	6	6087.0	760.0	644.0	806.0	669.0	836.0
ETA404C2	B31	option	6	692.0	865.0	733.0	916.0	761.0	951.0
ETA404D2	B31	option	6	760.0	950.0	806.0	1007.0	836.0	1045.0
ETA404E3	B31	option	6	855.0	1069.0	906.0	1133.0	941.0	1176.0
ETA404F3	B31	option	6	950.0	1188.0	1007.0	1259.0	1045.0	1306.0
ETA404G4	B31	option	6	1045.0	1306.0	1108.0	1385.0	1150.0	1437.0

**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**



Ratings 50Hz		
CONNECTIONS		
	star	parallel star
Number of Wires	6 or 12	12
Standard Winding	400V	220V

**Standard  
Winding B31**

				220V / 440V					
Excitation				cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA
ETA404H4	B31	option	6	1140.0	1425.0	1208.0	1511.0	1254.0	1568.0
ETA454A1	B31	option	6	1064.0	1330.0	1128.0	1410.0	1170.0	1463.0
ETA454B1	B31	option	6	1188.0	1484.0	1259.0	1573.0	1306.0	1633.0
ETA454C2	B31	option	6	1283.0	1603.0	1359.0	1699.0	1411.0	1763.0
ETA454D2	B31	option	6	1444.0	1803.0	1531.0	1913.0	1588.0	1986.0
ETA454E3	B31	option	6	1568.0	1959.0	1662.0	2077.0	1724.0	2155.0
ETA454F4	B31	option	6	1710.0	2138.0	1813.0	2266.0	1881.0	2351.0
ETA454G5	B31	option	6	1805.0	2256.0	1913.0	2392.0	1986.0	2482.0
ETA454H5	B31	option	6	1900.0	2375.0	2014.0	2518.0	2090.0	2613.0

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.



**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**

Ratings 50Hz		
CONNECTIONS		
	double Delta	open Delta
Number of Wires	12	12
Standard Winding	220-240V	220-240V

**Standard  
Winding B31 - 1-ph**

Excitation				220V / 230V / 440V					
TYPE	SHUNT	PMG	WIRES	cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
				KW	KVA	KW	KVA	KW	KVA
ETA164A1	B31	-	12	3.9	4.9	4.1	5.2	4.3	5.4
ETA164B1	B31	-	12	5.3	6.6	5.6	7.0	5.8	7.3
ETA164C2	B31	-	12	6.5	8.1	6.9	8.6	7.1	8.9
ETA164D2	B31	-	12	7.7	9.6	8.1	10.2	8.4	10.6
ETA164E2	B31	-	12	8.0	11.0	9.0	11.0	9.0	12.0
ETA184A1	B31	-	12	10.0	12.0	10.0	13.0	10.6	13.2
ETA184B1	B31	-	12	11.0	14.0	11.4	14.3	11.9	14.9
ETA184C2	B31	-	12	12.0	15.0	13.0	16.0	13.2	17.0
ETA184D2	B31	-	12	13.0	17.0	14.0	17.5	14.5	18.2
ETA184E3	B31	-	12	15.0	19.0	15.9	19.9	16.5	20.6
ETA184F4	B31	-	12	17.0	21.0	18.0	22.3	18.0	23.0
ETA184G4	B31	-	12	18.0	23.0	19.1	23.9	19.8	24.8
ETA184H5	B31	-	12	19.0	24.0	20.0	25.4	21.1	26.4
ETA184K5	B31	-	12	20.0	26.0	22.0	27.0	22.4	28.1
ETA224A1	B31	option	12	19.0	24.0	20.0	25.0	21.0	26.0
ETA224B1	B31	option	12	20.0	26.0	22.0	27.0	22.0	28.0
ETA224C1	B31	option	12	24.0	30.0	25.0	32.0	26.0	33.0
ETA224D2	B31	option	12	27.0	34.0	29.0	36.0	30.0	37.0
ETA224E2	B31	option	12	30.0	38.0	32.0	40.0	33.0	41.0
ETA224F3	B31	option	12	32.0	41.0	34.0	43.0	36.0	45.0
ETA224G3	B31	option	12	35.0	44.0	37.0	46.0	38.0	48.0
ETA224H4	B31	option	12	38.0	48.0	41.0	51.0	42.0	53.0
ETA224K4	B31	option	12	41.0	51.0	43.0	54.0	45.0	56.0
ETA224L5	B31	option	12	45.0	56.0	48.0	60.0	50.0	62.0
ETA224M5	B31	option	12	48.0	60.0	51.0	64.0	53.0	66.0
ETA274A1	B31	option	12	48.0	60.0	51.0	64.0	53.0	66.0
ETA274B2	B31	option	12	54.0	68.0	57.0	72.0	59.0	74.0
ETA274C2	B31	option	12	60.0	75.0	64.0	80.0	66.0	83.0
ETA274D3	B31	option	12	67.0	84.0	71.0	89.0	74.0	92.0
ETA274E3	B31	option	12	72.0	90.0	76.0	95.0	79.0	99.0

**Brushless synchronous alternator - 4Pole  
3Phase / 1500rpm / P.F.=0.8 / H / 50Hz**




Ratings 50Hz		
CONNECTIONS		
	double Delta	open Delta
Number of Wires	12	12
Standard Winding	220-240V	220-240V

**Standard  
Winding B31 - 1-ph**

				220V / 230V / 440V					
Excitation				cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA
ETA274E4	B31	option	12	77.0	96.0	81.0	102.0	84.0	106.0
ETA274G4	B31	option	12	84.0	105.0	89.0	111.0	92.0	116.0
ETA274H5	B31	option	12	90.0	113.0	95.0	119.0	99.0	124.0
ETA274K5	B31	option	12	96.0	120.0	102.0	127.0	106.0	132.0
ETA274L6	B31	option	12	108.0	135.0	114.0	143.0	119.0	149.0
ETA274M7	B31	option	12	120.0	150.0	127.0	159.0	132.0	165.0
ETA314A1	B31	option	12	120.0	150.0	127.0	159.0	132.0	165.0
ETA314B1	B31	option	12	132.0	165.0	140.0	175.0	145.0	182.0
ETA314C2	B31	option	12	144.0	180.0	153.0	191.0	158.0	198.0
ETA314D2	B31	option	12	150.0	188.0	159.0	199.0	165.0	206.0
ETA314E2	B31	option	12	156.0	195.0	165.0	207.0	172.0	215.0
ETA314F3	B31	option	12	168.0	210.0	178.0	223.0	185.0	231.0
ETA314G3	B31	option	12	180.0	225.0	191.0	239.0	198.0	248.0
ETA314H4	B31	option	12	192.0	240.0	204.0	254.0	211.0	264.0
ETA314K5	B31	option	12	216.0	270.0	229.0	286.0	238.0	297.0

1. Only 12 wire alternators can use a single-phase alternator connection (6 wire standard in ETA224, ETA274 and ETA314).




**Brushless synchronous alternator - 4Pole**  
**3Phase / 1800rpm / P.F.=0.8 / H / 60Hz**

Ratings 60Hz			
CONNECTIONS			
	star	delta	paralle star
Number of Wires	6 or 12	6 or 12	12
Standard Winding	380-416-440-460	220-240V	208-220-230
	- 480V		- 240V

**Standard Winding B31**

Excitation				380V / 400V						208V / 416V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/40°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA164A1	B31	-	12	6.5	8.1	6.9	8.6	7.2	8.9	7.0	8.7	7.4	9.3	7.7	9.6
ETA164B1	B31	-	12	8.8	11.0	9.3	11.7	9.7	12.1	9.5	11.8	10.0	12.5	10.4	13.0
ETA164C2	B31	-	12	10.8	13.5	11.4	14.3	11.9	14.9	11.6	14.5	12.3	15.4	12.8	16.0
ETA164D2	B31	-	12	12.8	16.0	13.6	17.0	14.1	17.6	13.8	17.2	14.6	18.2	15.1	18.9
ETA164E2	B31	-	12	14.0	17.5	14.8	18.6	15.4	19.3	15.0	18.8	16.0	19.9	16.6	20.7
ETA184A1	B31	-	12	16.0	20.0	17.0	21.2	17.6	22.0	17.0	21.5	18.2	22.8	18.9	23.7
ETA184B1	B31	-	12	18.0	22.5	19.1	23.9	19.8	24.8	19.0	24.2	20.5	25.6	21.3	26.6
ETA184C2	B31	-	12	20.0	25.0	21.2	26.5	22.0	27.5	22.0	26.9	22.8	28.5	23.7	29.6
ETA184D2	B31	-	12	22.0	27.5	23.3	29.2	24.2	30.3	24.0	29.6	25.1	31.3	25.0	32.5
ETA184E3	B31	-	12	25.0	31.3	26.5	33.1	27.5	34.4	27.0	33.6	28.5	35.6	29.6	37.0
ETA184F4	B31	-	12	28.0	35.0	29.7	37.1	30.8	38.5	30.0	37.6	31.9	39.9	33.1	41.4
ETA184G4	B31	-	12	30.0	37.5	31.8	39.8	33.0	41.3	32.0	40.3	34.2	42.7	35.5	44.3
ETA184H5	B31	-	12	32.0	40.0	33.9	42.4	35.2	44.0	34.0	43.0	36.5	45.6	37.8	47.3
ETA184K5	B31	-	12	34.0	42.5	36.0	45.1	37.4	46.8	37.0	45.7	38.7	48.4	40.2	50.3
ETA224A1	B31	option	6	32.0	40.0	34.0	42.0	35.0	44.0	34.0	43.0	36.0	46.0	38.0	47.0
ETA224B1	B31	option	6	34.0	43.0	36.0	45.0	37.0	47.0	37.0	43.0	39.0	48.0	40.0	50.0
ETA224C1	B31	option	6	40.0	50.0	42.0	53.0	44.0	55.0	43.0	54.0	46.0	57.0	47.0	59.0
ETA224D2	B31	option	6	45.0	56.0	48.0	60.0	50.0	62.0	48.0	60.0	51.0	64.0	53.0	67.0
ETA224E2	B31	option	6	50.0	63.0	53.0	66.0	55.0	69.0	54.0	67.0	57.0	71.0	59.0	74.0
ETA224F3	B31	option	6	54.0	68.0	57.0	72.0	59.0	74.0	58.0	73.0	62.0	77.0	64.0	80.0
ETA224G3	B31	option	6	58.0	73.0	61.0	77.0	64.0	80.0	62.0	78.0	66.0	83.0	69.0	86.0
ETA224H4	B31	option	6	64.0	80.0	68.0	85.0	70.0	88.0	69.0	86.0	73.0	91.0	76.0	95.0
ETA224K4	B31	option	6	68.0	85.0	72.0	90.0	75.0	94.0	73.0	91.0	77.0	97.0	80.0	101.0
ETA224L5	B31	option	6	75.0	94.0	80.0	99.0	83.0	103.0	81.0	101.0	85.0	107.0	89.0	111.0
ETA224M5	B31	option	6	80.0	100.0	85.0	106.0	88.0	110.0	86.0	108.0	91.0	114.0	95.0	118.0
ETA274A1	B31	option	6	80.0	100.0	85.0	106.0	88.0	110.0	86.0	108.0	91.0	114.0	95.0	118.0
ETA274B2	B31	option	6	90.0	113.0	95.0	119.0	99.0	124.0	97.0	121.0	103.0	128.0	106.0	133.0
ETA274C2	B31	option	6	100.0	125.0	106.0	133.0	110.0	138.0	108.0	134.0	114.0	142.0	118.0	148.0
ETA274D3	B31	option	6	112.0	140.0	119.0	148.0	123.0	154.0	120.0	151.0	128.0	160.0	132.0	166.0
ETA274E3	B31	option	6	120.0	150.0	127.0	159.0	132.0	165.0	129.0	161.0	137.0	171.0	142.0	177.0




## Brushless synchronous alternator - 4Pole 3Phase / 1800rpm / P.F.=0.8 / H / 60Hz

Ratings 60Hz			
CONNECTIONS			
	star	delta	parallel star
Number of Wires	6 or 12	6 or 12	12
Standard Winding	380-416-440-460 - 480V	220-240V	208-220-230 - 240V

### Standard Winding B31

Excitation				380V / 400V						208V / 416V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/40°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA274F4	B31	option	6	128.0	160.0	136.0	170.0	141.0	176.0	138.0	172.0	146.0	182.0	151.0	189.0
ETA274G4	B31	option	6	140.0	175.0	148.0	186.0	154.0	193.0	151.0	188.0	160.0	199.0	166.0	207.0
ETA274H5	B31	option	6	150.0	188.0	159.0	199.0	165.0	206.0	161.0	202.0	171.0	214.0	177.0	222.0
ETA274K5	B31	option	6	160.0	200.0	170.0	212.0	176.0	220.0	172.0	215.0	182.0	228.0	189.0	237.0
ETA274L6	B31	option	6	180.0	225.0	191.0	239.0	198.0	248.0	194.0	242.0	205.0	256.0	213.0	266.0
ETA274M7	B31	option	6	200.0	250.0	212.0	265.0	220.0	275.0	215.0	269.0	228.0	285.0	237.0	296.0
ETA314A1	B31	option	6	200.0	250.0	212.0	265.0	220.0	275.0	215.0	269.0	228.0	285.0	237.0	296.0
ETA314B1	B31	option	6	220.0	275.0	233.0	292.0	242.0	303.0	237.0	296.0	251.0	313.0	260.0	325.0
ETA314C2	B31	option	6	240.0	300.0	254.0	318.0	264.0	330.0	258.0	323.0	273.0	342.0	284.0	355.0
ETA314D2	B31	option	6	250.0	313.0	265.0	331.0	275.0	344.0	269.0	336.0	285.0	356.0	296.0	370.0
ETA314E2	B31	option	6	260.0	325.0	276.0	345.0	286.0	358.0	280.0	349.0	296.0	370.0	307.0	384.0
ETA314F3	B31	option	6	280.0	350.0	297.0	371.0	308.0	385.0	301.0	376.0	319.0	399.0	331.0	414.0
ETA314G3	B31	option	6	300.0	375.0	318.0	398.0	330.0	413.0	323.0	403.0	342.0	427.0	355.0	443.0
ETA314H4	B31	option	6	320.0	400.0	339.0	424.0	352.0	440.0	344.0	430.0	365.0	456.0	378.0	473.0
ETA314K5	B31	option	6	360.0	450.0	382.0	477.0	396.0	495.0	387.0	484.0	410.0	513.0	426.0	532.0
ETA354A1	B31	option	6	360.0	450.0	382.0	477.0	396.0	495.0	387.0	484.0	410.0	513.0	426.0	532.0
ETA354B1	B31	option	6	400.0	500.0	424.0	530.0	440.0	550.0	430.0	538.0	456.0	570.0	473.0	591.0
ETA354C2	B31	option	6	450.0	563.0	477.0	596.0	495.0	619.0	484.0	605.0	513.0	641.0	532.0	665.0
ETA354D3	B31	option	6	480.0	600.0	509.0	636.0	528.0	660.0	516.0	645.0	547.0	684.0	568.0	710.0
ETA354E3	B31	option	6	500.0	625.0	530.0	663.0	550.0	688.0	538.0	672.0	570.0	712.0	591.0	739.0
ETA354F4	B31	option	6	540.0	675.0	572.0	716.0	594.0	743.0	581.0	726.0	615.0	769.0	639.0	798.0
ETA354G4	B31	option	6	560.0	700.0	594.0	742.0	616.0	770.0	602.0	753.0	638.0	798.0	662.0	828.0
ETA354H5	B31	option	6	600.0	750.0	636.0	795.0	660.0	825.0	645.0	806.0	684.0	855.0	710.0	887.0
ETA404A1	B31	option	6	600.0	750.0	636.0	795.0	660.0	825.0	645.0	806.0	684.0	855.0	710.0	887.0
ETA404B1	B31	option	6	640.0	800.0	678.0	848.0	704.0	880.0	688.0	860.0	729.0	912.0	757.0	946.0
ETA404C2	B31	option	6	728.0	910.0	772.0	965.0	801.0	1001.0	783.0	978.0	830.0	1037.0	861.0	1076.0
ETA404D2	B31	option	6	800.0	1000.0	848.0	1060.0	880.0	1100.0	860.0	1075.0	912.0	1140.0	946.0	1183.0
ETA404E3	B31	option	6	900.0	1125.0	954.0	1193.0	990.0	1238.0	968.0	1209.0	1026.0	1282.0	1064.0	1330.0
ETA404F3	B31	option	6	1000.0	1250.0	1060.0	1325.0	1100.0	1375.0	1075.0	1344.0	1140.0	1424.0	1183.0	1478.0
ETA404G4	B31	option	6	1100.0	1375.0	1166.0	1458.0	1210.0	1513.0	1183.0	1478.0	1253.0	1567.0	1301.0	1626.0

**Brushless synchronous alternator - 4Pole**  
**3Phase / 1800rpm / P.F.=0.8 / H / 60Hz**




Ratings 60Hz			
CONNECTIONS			
	star	delta	parallel star
Number of Wires	6 or 12	6 or 12	12
Standard Winding	380-416-440-460	220-240V	208-220-230
	- 480V		- 240V

**Standard Winding B31**

Excitation				380V / 400V						208V / 416V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/40°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA404H4	B31	option	6	1200.0	1500.0	1272.0	1590.0	1320.0	1650.0	1290.0	1613.0	1367.0	1709.0	1419.0	1774.0
ETA454A1	B31	option	6	1120.0	1400.0	1187.0	1484.0	1232.0	1540.0	1204.0	1505.0	1276.0	1595.0	1324.0	1656.0
ETA454B1	B31	option	6	1250.0	1563.0	1325.0	1656.0	1375.0	1719.0	1344.0	1680.0	1424.0	1780.0	1478.0	1848.0
ETA454C2	B31	option	6	1350.0	1688.0	1431.0	1789.0	1485.0	1856.0	1451.0	1814.0	1538.0	1923.0	1596.0	1995.0
ETA454D2	B31	option	6	1520.0	1900.0	1611.0	2014.0	1672.0	2090.0	1634.0	2043.0	1732.0	2165.0	1797.0	2247.0
ETA454E3	B31	option	6	1650.0	2063.0	1749.0	2186.0	1815.0	2269.0	1774.0	2217.0	1880.0	2350.0	1951.0	2439.0
ETA454F4	B31	option	6	1800.0	2250.0	1908.0	2385.0	1980.0	2475.0	1935.0	2419.0	2051.0	2564.0	2129.0	2661.0
ETA454G5	B31	option	6	1900.0	2375.0	2014.0	2518.0	2090.0	2613.0	2043.0	2553.0	2165.0	2706.0	2247.0	2808.0
ETA454H5	B31	option	6	2000.0	2500.0	2120.0	2650.0	2200.0	2750.0	2150.0	2688.0	2279.0	2849.0	2365.0	2956.0

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. (\*) Indicates that 12 wires can be selected as required.

**Brushless synchronous alternator - 4Pole**  
**3Phase / 1800rpm / P.F.=0.8 / H / 60Hz**




Ratings 60Hz			
CONNECTIONS			
	star	paralle star	delta
Number of Wires	6 or 12	12	6 or 12
Standard Winding	380-416-440-460	208-220-230	220-240V
	- 480V	- 240V	

**Standard Winding B31**

Excitation				220V / 440V						230-240V/460-480V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/40°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA164A1	B31	-	12	7.5	9.3	7.9	9.9	8.2	10.3	7.8	9.8	8.3	10.3	8.6	10.7
ETA164B1	B31	-	12	10.1	12.7	10.7	13.4	11.1	13.9	10.6	13.2	11.2	14.0	11.6	14.5
ETA164C2	B31	-	12	12.4	15.5	13.2	16.5	13.7	17.1	13.0	16.2	13.7	17.2	14.3	17.8
ETA164D2	B31	-	12	14.7	18.4	15.6	19.5	16.2	20.2	15.4	19.2	16.3	20.4	16.9	21.1
ETA164E2	B31	-	12	16.1	20.1	17.1	21.3	17.7	22.1	16.8	21.0	17.8	22.3	18.5	23.1
ETA184A1	B31	-	12	18.4	23.0	19.5	24.4	20.2	25.3	19.2	24.0	20.4	25.4	21.1	26.4
ETA184B1	B31	-	12	20.7	25.9	21.9	27.4	22.8	28.5	21.6	27.0	22.9	28.6	23.8	29.7
ETA184C2	B31	-	12	23.0	28.8	24.4	30.5	25.3	31.6	24.0	30.0	25.4	31.8	26.4	33.0
ETA184D2	B31	-	12	25.3	31.6	26.8	33.5	27.8	34.8	26.4	33.0	28.0	35.0	29.0	36.3
ETA184E3	B31	-	12	28.8	35.9	30.5	38.1	31.6	39.5	30.0	37.5	31.8	39.8	33.0	41.3
ETA184F4	B31	-	12	32.2	40.3	34.1	42.7	35.4	44.3	33.6	42.0	35.6	44.5	37.0	46.2
ETA184G4	B31	-	12	34.5	43.1	36.6	45.7	38.0	47.4	36.0	45.0	38.2	47.7	39.6	49.5
ETA184H5	B31	-	12	36.8	46.0	39.0	48.8	40.5	50.6	38.4	48.0	40.7	50.9	42.2	52.8
ETA184K5	B31	-	12	39.1	48.9	41.4	51.8	43.0	53.8	40.8	51.0	43.2	54.1	44.9	56.1
ETA224A1	B31	option	6	37.0	46.0	39.0	49.0	40.0	51.0	38.0	48.0	41.0	51.0	42.0	53.0
ETA224B1	B31	option	6	39.0	49.0	41.0	52.0	43.0	54.0	41.0	51.0	43.0	54.0	45.0	56.0
ETA224C1	B31	option	6	46.0	58.0	49.0	61.0	51.0	63.0	48.0	60.0	51.0	64.0	53.0	66.0
ETA224D2	B31	option	6	52.0	65.0	55.0	69.0	57.0	71.0	54.0	68.0	57.0	72.0	59.0	74.0
ETA224E2	B31	option	6	58.0	72.0	61.0	76.0	63.0	79.0	60.0	75.0	64.0	80.0	66.0	83.0
ETA224F3	B31	option	6	62.0	78.0	66.0	82.0	68.0	85.0	65.0	81.0	69.0	86.0	71.0	89.0
ETA224G3	B31	option	6	67.0	83.0	71.0	88.0	73.0	92.0	70.0	87.0	74.0	92.0	77.0	96.0
ETA224H4	B31	option	6	74.0	92.0	78.0	98.0	81.0	101.0	77.0	96.0	81.0	102.0	84.0	106.0
ETA224K4	B31	option	6	78.0	98.0	83.0	104.0	86.0	108.0	82.0	102.0	86.0	108.0	90.0	112.0
ETA224L5	B31	option	6	86.0	108.0	91.0	114.0	95.0	119.0	90.0	113.0	95.0	119.0	99.0	124.0
ETA224M5	B31	option	6	92.0	115.0	98.0	122.0	101.0	127.0	96.0	120.0	102.0	127.0	106.0	132.0
ETA274A1	B31	option	6	92.0	115.0	98.0	122.0	101.0	127.0	96.0	120.0	102.0	127.0	106.0	132.0
ETA274B2	B31	option	6	104.0	129.0	110.0	137.0	114.0	142.0	108.0	135.0	114.0	143.0	119.0	149.0
ETA274C2	B31	option	6	115.0	144.0	122.0	152.0	127.0	158.0	120.0	150.0	127.0	159.0	132.0	165.0
ETA274D3	B31	option	6	129.0	161.0	137.0	171.0	142.0	177.0	134.0	168.0	142.0	178.0	148.0	185.0
ETA274E3	B31	option	6	138.0	173.0	146.0	183.0	152.0	190.0	144.0	180.0	153.0	191.0	158.0	198.0




## Brushless synchronous alternator - 4Pole 3Phase / 1800rpm / P.F.=0.8 / H / 60Hz

### Standard Winding B31

Ratings 60Hz			
CONNECTIONS			
	star	paralle star	delta
Number of Wires	6 or 12	12	6 or 12
Standard Winding	380-416-440-460	208-220-230	220-240V
	- 480V	- 240V	

Excitation				220V / 440V						230-240V / 460-480V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/40°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA274F4	B31	option	6	147.0	184.0	156.0	195.0	162.0	202.0	154.0	192.0	163.0	204.0	169.0	211.0
ETA274G4	B31	option	6	161.0	201.0	171.0	213.0	177.0	221.0	168.0	210.0	178.0	223.0	185.0	231.0
ETA274H5	B31	option	6	173.0	216.0	183.0	229.0	190.0	237.0	180.0	225.0	191.0	239.0	198.0	248.0
ETA274K5	B31	option	6	184.0	230.0	195.0	244.0	202.0	253.0	192.0	240.0	204.0	254.0	211.0	264.0
ETA274L6	B31	option	6	207.0	259.0	219.0	274.0	228.0	285.0	216.0	270.0	229.0	286.0	238.0	297.0
ETA274M7	B31	option	6	230.0	288.0	244.0	305.0	253.0	316.0	240.0	300.0	254.0	318.0	264.0	330.0
ETA314A1	B31	option	6	230.0	288.0	244.0	305.0	253.0	316.0	240.0	300.0	254.0	318.0	264.0	330.0
ETA314B1	B31	option	6	253.0	316.0	268.0	335.0	278.0	348.0	264.0	330.0	280.0	350.0	290.0	363.0
ETA314C2	B31	option	6	276.0	345.0	293.0	366.0	304.0	380.0	288.0	360.0	305.0	382.0	317.0	396.0
ETA314D2	B31	option	6	288.0	359.0	305.0	381.0	316.0	395.0	300.0	375.0	318.0	398.0	330.0	413.0
ETA314E2	B31	option	6	299.0	374.0	317.0	396.0	329.0	411.0	312.0	390.0	331.0	413.0	343.0	429.0
ETA314F3	B31	option	6	322.0	403.0	341.0	427.0	354.0	443.0	336.0	420.0	356.0	445.0	370.0	462.0
ETA314G3	B31	option	6	345.0	431.0	366.0	457.0	380.0	474.0	360.0	450.0	382.0	477.0	396.0	495.0
ETA314H4	B31	option	6	368.0	460.0	390.0	488.0	405.0	506.0	384.0	480.0	407.0	509.0	422.0	528.0
ETA314K5	B31	option	6	414.0	518.0	439.0	549.0	455.0	569.0	432.0	540.0	458.0	572.0	475.0	594.0
ETA354A1	B31	option	6	414.0	518.0	439.0	549.0	455.0	569.0	432.0	540.0	458.0	572.0	475.0	594.0
ETA354B1	B31	option	6	460.0	575.0	488.0	610.0	506.0	633.0	480.0	600.0	509.0	636.0	528.0	660.0
ETA354C2	B31	option	6	518.0	647.0	549.0	686.0	569.0	712.0	540.0	675.0	572.0	716.0	594.0	743.0
ETA354D3	B31	option	6	552.0	690.0	585.0	731.0	607.0	759.0	576.0	720.0	611.0	763.0	634.0	792.0
ETA354E3	B31	option	6	575.0	719.0	610.0	762.0	633.0	791.0	600.0	750.0	636.0	795.0	660.0	825.0
ETA354F4	B31	option	6	621.0	776.0	658.0	823.0	683.0	854.0	648.0	810.0	687.0	859.0	713.0	891.0
ETA354G4	B31	option	6	644.0	805.0	683.0	853.0	708.0	886.0	672.0	840.0	712.0	890.0	739.0	824.0
ETA354H5	B31	option	6	690.0	863.0	731.0	914.0	759.0	949.0	720.0	900.0	763.0	954.0	792.0	990.0
ETA404A1	B31	option	6	690.0	863.0	731.0	914.0	759.0	949.0	720.0	900.0	763.0	954.0	792.0	990.0
ETA404B1	B31	option	6	736.0	920.0	780.0	975.0	810.0	1012.0	768.0	960.0	814.0	1018.0	845.0	1056.0
ETA404C2	B31	option	6	837.0	1047.0	887.0	1109.0	921.0	1151.0	874.0	1092.0	926.0	1158.0	961.0	1201.0
ETA404D2	B31	option	6	920.0	1150.0	975.0	1219.0	1012.0	1265.0	960.0	1200.0	1018.0	1272.0	1056.0	1320.0
ETA404E3	B31	option	6	1035.0	1294.0	1097.0	1371.0	1139.0	1423.0	1080.0	1350.0	1145.0	1431.0	1188.0	1485.0
ETA404F3	B31	option	6	1150.0	1438.0	1219.0	1524.0	1265.0	1581.0	1200.0	1500.0	1272.0	1590.0	1320.0	1650.0
ETA404G4	B31	option	6	1265.0	1581.0	1341.0	1676.0	1392.0	1739.0	1320.0	1650.0	1399.0	1749.0	1452.0	1815.0

**Brushless synchronous alternator - 4Pole**  
**3Phase / 1800rpm / P.F.=0.8 / H / 60Hz**



Ratings 60Hz			
CONNECTIONS			
	star	paralle star	delta
Number of Wires	6 or 12	12	6 or 12
Standard Winding	380-416-440-460	208-220-230	220-240V
	- 480V	- 240V	

**Standard Winding B31**

Excitation				220V / 440V						230-240V / 460-480V					
				cont. 125K/40°C		st. by 150K/40°C		st. by 163K/40°C		cont. 125K/40°C		st. by 150K/40°C		st. by 163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA	KW	KVA
ETA404H4	B31	option	6	1380.0	1725.0	1463.0	1829.0	1518.0	1989.0	1440.0	1800.0	1526.0	1908.0	1584.0	1980.0
ETA454A1	B31	option	6	1288.0	1610.0	1365.0	1707.0	1417.0	1771.0	1344.0	1680.0	1425.0	1781.0	1478.0	1848.0
ETA454B1	B31	option	6	1438.0	1797.0	1524.0	1905.0	1581.0	1977.0	1500.0	1875.0	1590.0	1988.0	1650.0	2063.0
ETA454C2	B31	option	6	1553.0	1941.0	1646.0	2057.0	1708.0	2135.0	1620.0	2025.0	1717.0	2147.0	1782.0	2228.0
ETA454D2	B31	option	6	1748.0	2185.0	1853.0	2316.0	1923.0	2404.0	1824.0	2280.0	1933.0	2417.0	2006.0	2508.0
ETA454E3	B31	option	6	1898.0	2372.0	2011.0	2514.0	2087.0	2609.0	1980.0	2475.0	2099.0	2624.0	2178.0	2723.0
ETA454F4	B31	option	6	2070.0	2588.0	2194.0	2743.0	2277.0	2846.0	2160.0	2700.0	2290.0	2862.0	2376.0	2970.0
ETA454G5	B31	option	6	2185.0	2731.0	2316.0	2895.0	2404.0	3004.0	2280.0	2850.0	2417.0	3021.0	2508.0	3135.0
ETA454H5	B31	option	6	2300.0	2875.0	2438.0	3048.0	2530.0	3163.0	2400.0	3000.0	2544.0	3180.0	2640.0	3300.0

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. (\*) Indicates that 12 wires can be selected as required.



**Brushless synchronous alternator - 4Pole  
3Phase / 1800rpm / P.F.=0.8 / H / 60Hz**

Ratings 60Hz		
CONNECTIONS		
	double Delta	open Delta
Number of Wires	12	12
Standard Winding	220-240V	220-240V

**Standard  
Winding B31 - 1-ph**

Excitation				220V / 230V / 440V					
TYPE	SHUNT	PMG	WIRES	cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
				KW	KVA	KW	KVA	KW	KVA
ETA164A1	B31	-	12	4.2	5.2	4.4	5.6	4.6	5.8
ETA164B1	B31	-	12	5.7	7.1	6.0	7.5	6.2	7.8
ETA164C2	B31	-	12	7.0	8.7	7.4	9.2	7.7	9.6
ETA164D2	B31	-	12	8.3	10.3	8.8	10.9	9.1	11.4
ETA164E2	B31	-	12	9.0	11.0	10.0	12.0	10.0	12.0
ETA184A1	B31	-	12	10.0	13.0	11.0	14.0	11.4	14.2
ETA184B1	B31	-	12	12.0	15.0	12.3	15.4	12.8	16.0
ETA184C2	B31	-	12	13.0	16.0	14.0	17.0	14.2	18.0
ETA184D2	B31	-	12	14.0	18.0	15.0	18.8	15.6	19.5
ETA184E3	B31	-	12	16.0	20.0	17.1	21.4	17.7	22.2
ETA184F4	B31	-	12	18.0	23.0	19.0	23.9	20.0	25.0
ETA184G4	B31	-	12	19.0	24.0	20.5	25.6	21.3	26.6
ETA184H5	B31	-	12	21.0	26.0	21.9	27.3	22.7	28.4
ETA184K5	B31	-	12	22.0	27.0	23.0	29.1	24.1	30.2
ETA224A1	B31	option	12	21.0	26.0	22.0	27.0	23.0	28.0
ETA224B1	B31	option	12	22.0	27.0	23.0	29.0	24.0	30.0
ETA224C1	B31	option	12	26.0	32.0	27.0	34.0	28.0	35.0
ETA224D2	B31	option	12	29.0	36.0	31.0	38.0	32.0	40.0
ETA224E2	B31	option	12	32.0	40.0	34.0	43.0	35.0	44.0
ETA224F3	B31	option	12	35.0	44.0	37.0	46.0	38.0	48.0
ETA224G3	B31	option	12	37.0	47.0	40.0	50.0	41.0	51.0
ETA224H4	B31	option	12	41.0	52.0	44.0	55.0	45.0	57.0
ETA224K4	B31	option	12	44.0	55.0	46.0	58.0	48.0	60.0
ETA224L5	B31	option	12	48.0	60.0	51.0	64.0	53.0	67.0
ETA224M5	B31	option	12	52.0	65.0	55.0	68.0	57.0	71.0
ETA274A1	B31	option	12	52.0	65.0	55.0	68.0	57.0	71.0
ETA274B2	B31	option	12	58.0	73.0	62.0	77.0	64.0	80.0
ETA274C2	B31	option	12	65.0	81.0	68.0	85.0	71.0	89.0
ETA274D3	B31	option	12	72.0	90.0	77.0	96.0	79.0	99.0
ETA274E3	B31	option	12	77.0	97.0	82.0	103.0	85.0	106.0

**Brushless synchronous alternator - 4Pole  
3Phase / 1800rpm / P.F.=0.8 / H / 60Hz**

Ratings 60Hz		
CONNECTIONS		
	double Delta	open Delta
Number of Wires	12	12
Standard Winding	220-240V	220-240V

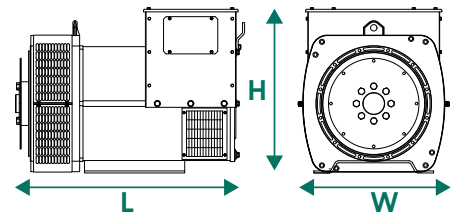
**Standard  
Winding B31 - 1-ph**

				220V / 230V / 440V					
Excitation				cont. /125K/40°C		st. by /150K/40°C		st. by /163K/27°C	
TYPE	SHUNT	PMG	WIRES	KW	KVA	KW	KVA	KW	KVA
ETA274E4	B31	option	12	83.0	103.0	88.0	109.0	91.0	114.0
ETA274G4	B31	option	12	90.0	113.0	96.0	120.0	99.0	124.0
ETA274H5	B31	option	12	97.0	121.0	103.0	128.0	106.0	133.0
ETA274K5	B31	option	12	103.0	129.0	109.0	137.0	114.0	142.0
ETA274L6	B31	option	12	116.0	145.0	123.0	154.0	128.0	160.0
ETA274M7	B31	option	12	129.0	161.0	137.0	171.0	142.0	177.0
ETA314A1	B31	option	12	129.0	161.0	137.0	171.0	142.0	177.0
ETA314B1	B31	option	12	142.0	177.0	150.0	188.0	156.0	195.0
ETA314C2	B31	option	12	155.0	194.0	164.0	205.0	170.0	213.0
ETA314D2	B31	option	12	161.0	202.0	171.0	214.0	177.0	222.0
ETA314E2	B31	option	12	168.0	210.0	178.0	222.0	184.0	231.0
ETA314F3	B31	option	12	181.0	226.0	191.0	239.0	199.0	248.0
ETA314G3	B31	option	12	194.0	242.0	205.0	256.0	213.0	266.0
ETA314H4	B31	option	12	206.0	258.0	219.0	273.0	227.0	284.0
ETA314K5	B31	option	12	232.0	290.0	246.0	308.0	255.0	319.0

1. Only 12 wire alternators can use a single-phase alternator connection (6 wire standard in ETA224, ETA274 and ETA314).

## Brushless synchronous alternator - 4Pole

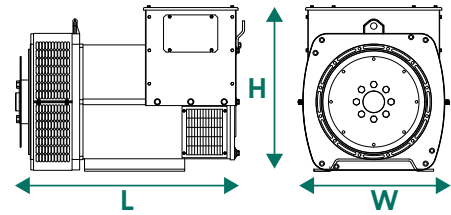
### ETA SERIES DIMENSIONS AND WEIGHTS



TYPE	SINGLE BEARING			TWO BEARING		
	NET(kg)	GROSS(kg)	PACKAGE DIMENSIONS(mm)	NET(kg)	GROSS(kg)	PACKAGE DIMENSIONS(mm)
ETA274F4	460.0	501.0	970*650*880	475.0	518.0	1100*650*880
ETA274G4	472.0	513.0	970*650*880	487.0	530.0	1100*650*880
ETA274H5	491.0	533.0	1010*650*880	506.0	550.0	1100*650*880
ETA274K5	512.0	554.0	1010*650*880	527.0	571.0	1100*650*880
ETA274L6	563.0	606.0	1070*650*880	578.0	578.0	1200*650*880
ETA274M7	631.0	675.0	1120*650*880	646.0	646.0	1250*650*880
ETA314A1	660.0	723.0	960*786*1040	675.0	675.0	1050*786*1040
ETA314B1	702.0	765.0	960*786*1040	717.0	717.0	1050*786*1040
ETA314C2	741.0	806.0	1010*786*1040	756.0	756.0	1100*786*1040
ETA314D2	759.0	824.0	1010*786*1040	774.0	774.0	1100*786*1040
ETA314E2	721.0	786.0	1010*786*1040	736.0	736.0	1100*786*1040
ETA314F3	783.0	850.0	1090*786*1040	798.0	798.0	1180*786*1040
ETA314G3	801.0	868.0	1090*786*1040	816.0	816.0	1180*786*1040
ETA314H4	875.0	942.0	1090*786*1040	890.0	890.0	1180*786*1040
ETA314K5	983.0	1050.0	1150*786*1040	998.0	998.0	1240*786*1040
ETA354A1	1073.0	1151.0	1237*846*1130	1088.0	1088.0	1387*846*1130
ETA354B1	1096.0	1174.0	1237*746*1130	1111.0	1111.0	1387*846*1130
ETA354C2	1174.0	1252.0	1337*846*1130	1189.0	1189.0	1487*846*1130
ETA354D3	1229.0	1307.0	1337*846*1130	1244.0	1244.0	1487*846*1130
ETA354E3	1257.0	1335.0	1337*846*1130	1272.0	1272.0	1487*846*1130
ETA354F4	1349.0	1433.0	1432*846*1130	1364.0	1364.0	1582*846*1130
ETA354G4	1372.0	1456.0	1432*846*1130	1387.0	1387.0	1582*846*1130
ETA354H5	1416.0	1500.0	1432*846*1130	1431.0	1431.0	1582*846*1130
ETA404A1	1370.0	1481.0	1590*1000*1230	1390.0	1390.0	1760*1000*1230
ETA404B1	1575.0	1686.0	1590*1000*1230	1595.0	1595.0	1760*1000*1230
ETA404C2	1693.0	1807.0	1680*1000*1230	1713.0	1713.0	1850*1000*1230
ETA404D2	1817.0	1931.0	1680*1000*1230	1837.0	1837.0	1850*1000*1230
ETA404E3	2063.0	2182.0	1820*1000*1230	2083.0	2083.0	1990*1000*1230
ETA404F3	2221.0	2340.0	1820*1000*1230	2241.0	2241.0	1990*1000*1230
ETA404G4	2453.0	2575.0	1910*1000*1230	2473.0	2473.0	2080*1000*1230

## Brushless synchronous alternator - 4Pole

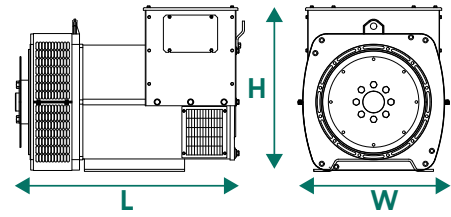
### ETA SERIES DIMENSIONS AND WEIGHTS



TYPE	SINGLE BEARING			TWO BEARING		
	NET(kg)	GROSS(kg)	PACKAGE DIMENSIONS(mm)	NET(kg)	GROSS(kg)	PACKAGE DIMENSIONS(mm)
ETA164A1	76.0	96.0	542*504*620	82.0	103.0	602*504*620
ETA164B1	83.0	103.0	542*504*620	89.0	110.0	602*504*620
ETA164C2	93.0	114.0	597*504*620	99.0	121.0	657*504*620
ETA164D2	97.0	118.0	597*504*620	103.0	125.0	657*504*620
ETA164E2	102.0	123.0	597*540*620	108.0	130.0	657*540*620
ETA184A1	112.0	135.0	677*504*620	118.0	142.0	737*504*620
ETA184B1	119.0	142.0	677*504*620	125.0	144.0	737*504*620
ETA184C2	124.0	147.0	677*504*620	130.0	154.0	737*504*620
ETA184D2	131.0	154.0	677*504*620	137.0	161.0	737*504*620
ETA184E3	143.0	166.0	677*504*620	149.0	173.0	737*504*620
ETA184F4	158.0	182.0	747*504*620	164.0	189.0	807*504*620
ETA184G4	163.0	187.0	747*504*620	169.0	194.0	807*504*620
ETA184H5	172.0	196.0	747*504*620	178.0	203.0	807*504*620
ETA184K5	181.0	205.0	747*504*620	187.0	212.0	807*504*620
ETA224A1	202.0	230.0	710*560*830	214.0	244.0	810*560*830
ETA224B1	207.0	235.0	710*560*830	219.0	249.0	810*560*830
ETA224C1	216.0	244.0	710*560*830	228.0	258.0	810*560*830
ETA224D2	231.0	261.0	805*560*830	243.0	275.0	905*560*830
ETA224E2	241.0	271.0	805*560*830	253.0	285.0	905*560*830
ETA224F3	256.0	286.0	805*560*830	268.0	300.0	905*560*830
ETA224G3	265.0	295.0	805*560*830	277.0	309.0	905*560*830
ETA224H4	285.0	316.0	845*560*830	297.0	330.0	845*560*830
ETA224K4	304.0	335.0	845*560*830	316.0	349.0	945*560*830
ETA224L5	318.0	350.0	895*560*830	330.0	364.0	995*560*830
ETA224M5	330.0	362.0	895*560*830	342.0	376.0	995*560*830
ETA274A1	340.0	378.0	840*650*880	355.0	396.0	970*650*880
ETA274B2	376.0	415.0	880*650*880	391.0	433.0	1010*650*880
ETA274C2	394.0	433.0	880*650*880	409.0	451.0	1010*650*880
ETA274D3	421.0	462.0	970*650*880	436.0	479.0	1100*650*880
ETA274E3	432.0	473.0	970*650*880	447.0	490.0	1100*650*880

## Brushless synchronous alternator - 4Pole

### ETA SERIES DIMENSIONS AND WEIGHTS



TYPE	SINGLE BEARING			TWO BEARING		
	NET(kg)	GROSS(kg)	PACKAGE DIMENSIONS(mm)	NET(kg)	GROSS(kg)	PACKAGE DIMENSIONS(mm)
ETA404H4	2480.0	2602.0	1910*1000*1230	2500.0	2628.0	2080*1000*1230
ETA454A1	2668.0	2782.0	1730*1050*1350	2693.0	2815.0	1930*1050*1350
ETA454B1	2854.0	2968.0	1730*1050*1350	2879.0	3001.0	1930*1050*1350
ETA454C2	3085.0	3202.0	1800*1050*1350	3110.0	3235.0	2000*1050*1350
ETA454D2	3140.0	3257.0	1800*1050*1350	3165.0	3290.0	2000*1050*1350
ETA454E3	3471.0	3593.0	1950*1050*1350	3496.0	3626.0	2150*1050*1350
ETA454F4	3804.0	3929.0	2030*1050*1350	3829.0	3962.0	2230*1050*1350
ETA454G5	3825.0	3955.0	2150*1050*1350	3850.0	3988.0	2350*1050*1350
ETA454H5	4566.0	4696.0	2150*1050*1350	4591.0	4729.0	2350*1050*1350



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