



EMERSON[™]
Industrial Automation



10.5 ... 18.4 kVA - 50 Hz
11,5 ... 20.2 kVA - 60 Hz

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PARTNER ALTERNATORS

LSA 40 - 4 Pole - Single phase

Electrical and mechanical data

SPECIALY ADAPTED TO APPLICATIONS

The LSA 40 single-phase alternator is a machine with a dedicated single-phase winding. It has 10 to 40% more power than an equivalent three-phase alternator connected with the same single-phase voltage.

COMPLIANT WITH INTERNATIONAL STANDARDS

The LSA 40 alternator conforms to the main international standards and regulations:

- IEC 60034, NEMA MG 1.22, ISO 8528/3, CSA / UL on request, marine regulations, etc.

It can be integrated into a CE marked generator.

The LSA 40 is designed, manufactured and marketed in an ISO 9001 environment and ISO 14001.

TOP OF THE RANGE ELECTRICAL PERFORMANCE

- Class H insulation.
- Standard 4-wire re-connectable.
- Dedicated single phase windings, type M.
(15% derating for use at PF = 0,8) (PF = 1 corresponds to general use for single phase voltage).
- 4 lead stator allowing the reconnections below :
 - 50 Hz : 230 V in series, 115 V in parallel
 - 60 Hz : 240 V in series, 120 V in parallel
- Total harmonic content < 4%.
- R 791 interference suppression conforming to standard EN 55011 group 1 class B standard for European zone (CE marking).

EXCITATION AND REGULATION SYSTEM SUITED TO THE APPLICATION

Excitation system				Regulation options				
Voltage regulator	SHUNT	AREP	PMG	T.I. Current transformer for paralleling	R726 Mains paralleling	R 731 3-Phase sensing	R 734 3-Phase sensing on mains paralleling unbalanced	Potentiometer Remote voltage
R 220	Std	-	-	-	-	-	-	-

AVR voltage accuracy $\pm 2\%$.

PROTECTION SYSTEM SUITED TO THE ENVIRONMENT

- The LSA 40 is IP 23.
 - Standard winding protection for clean environments with relative humidity $\leq 95\%$, including indoor marine environments.
- Options:
- Filters on air inlet : derating 5%.
 - Filters on air inlet and air outlet (IP 44) : derating 10%.
 - Winding protection for harsh environments and relative humidity greater than 95%.
 - Space heaters.
 - Thermal protection for stator windings.
 - Height fixing optional : H = 180 mm with the order ..

REINFORCED MECHANICAL STRUCTURE USING FINITE ELEMENT MODELLING

- Compact rigid assembly to better withstand generator vibrations.
- Steel frame.
- Aluminium flanges and shields.
- Two-bearing and single-bearing versions designed to be suitable for commercially-available heat engines.
- Half-key balancing two bearing.
- Permanently greased bearings (20 000h).
- Direction of rotation : clockwise and anti-clockwise (without derating).

COMPACT AND DESIGN TERMINAL BOX

- Easy access to the AVR and to the connections.
- 8 way terminal block for reconnecting the voltage.
- Predrilled holes for cable gland.
- Steel terminal box in option.

FRAME DIMENSIONS

- Dimensions, weight and coupling are identical to LSA 40 three phase (see catalog ref : 4250).

General characteristics

Insulation class	H	Excitation system	SHUNT
Winding pitch	2/3 (wdg M)	AVR type	R 220
Number of wires	4	Voltage regulation (*)	± 2 %
Protection	IP 23	Short-circuit current	-
Altitude	≤ 1000 m	Totale Harmonic distortion THD (**)	< 5 %
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 100
Air flow	0.06m³/s, 50 Hz - 0.072m³/s, 60 Hz		

(*) Steady state. (**) Total harmonic distortion between phases, no-load or on-load (non-distorting).

Ratings 50 Hz - 1500 R.P.M.

kVA / kW - Power factor = 1				
Duty / T° C	Continuous / 40 °C		St. by./40 °C	St.by. / 27 °C
Class / T° K	H / 125° K	F / 105° K	H / 150° K	H / 163° K
1 phase series — — — —	230 V	230 V	230 V	230 V
1 phase parallel — — — —	115 V	115 V	115 V	115 V
40 VS1	10.5	9.5	11	11.4
40 VS2	12	10.9	12.7	13.2
40 S3	13.2	12	14	14.5
40 S4	14.5	13.2	15.4	16
40 M5	16	14.6	17	17.6
40 L7	18.4	16.7	19.5	20.2

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - Power factor = 1			
Continuous / 40 °C		St. by./40 °C	St.by. / 27 °C
H / 125° K	F / 105° K	H / 150° K	H / 150° K
240 V	240 V	240 V	240 V
120 V	120 V	120 V	120 V
11.5	10.5	12.2	12.7
13.5	12.3	14.3	14.9
14.5	13.2	15.4	16
15.8	14.4	16.7	17.4
17.6	16	18.7	19.4
20.2	18.4	21.4	22.2

Rating kVA at P.F. 0,8 = rating kVA/kW at P.F. 1 x 0,85 - Derating (kVA) cl B = rating (kVA) class H x 0,80

Efficiencies (%)

Class H / 40°C - Power factor = 1					
	Single phase : 220 V - 50 Hz				
	1/4	2/4	3/4	4/4	St. by
40 VS1	81.9	85.3	84.5	82.2	80.9
40 VS2	82.6	86.5	86.1	84.4	83.5
40 S3	83.4	87.2	86.8	85.4	84.6
40 S4	83.5	87.5	87.4	86.2	85.5
40 M5	83.9	88.1	88.2	87.2	86.7
40 L7	84.6	88.7	88.8	87.9	87.4

Single phase : 240 V - 60 Hz					
	1/4	2/4	3/4	4/4	St. by
	82.6	85.4	84.2	82	81
	83.7	86.5	85.6	83.7	82.8
	84.1	87.1	86.3	84.6	83.8
	84.4	87.6	87	85.5	84.8
	84.9	88.2	87.8	86.5	85.8
	85.4	88.7	88.4	87.1	86.5

Transient voltage variation

