



DAR AL-EBDA'A

POWER GENERATORS COMPANY



Perkins® TECHNICAL DATA SHEET

PL1700

Prime Power	Standby Power	Voltage/Ph	Hz/RPM	PF
1700 kVA/1368 kW	1880kVA/1504 kW	400/3Ph	50/1500	0.8

Prime power

unlimited hours usage with an average load factor of 80% of the published prime power over each 24 hours period. a 10% overload is available for 1 hour in every 12 hours operation.

The generator is working normally at 55 degrees with derating

Standby power

Limited to 500 hours annual usage with an average load factor of 80% of the published Standby power rating over each 24 hour

period. Up to 300 hours of annual usage may be run continuously. No overload is permitted on Standby power.

Available in 60HZ for all voltage ratings.

Standard Reference Condition

Note: Standard reference conditions 40°C (104°F) Air Inlet Temp, 100m (328 ft) A.S.L. 30% relative humidity.



Diesel Generator Set	
Engine Make /Model	PERKINS 4012-46TAG3A
Alternator Make /Model	Leroy Somer LSA 52.3 S5
Control Panel	DSE 7320 MKII
Base Frame / Silent Canopy	Robust Structure/ Corrosion Resistant
Circuit Breaker Type	3 Pole MCCB (4P Available as optional)
Built in Base Fuel Tank Capacity	N/A
Battery	Maintenance free Lead Acid

Dimensions	Length (cm)	Width (cm)	Height (cm)	Weight (KG)
Close Type	1220	240	363	13403
Open Type	540	220	414	9950

ENGINE SPECIFICATIONS		LUBRICATION SYSTEM	
Engine Make Model	PERKINS 4012-46TAG3A	Oil Filter Type	Spin-On Full Flow
No. of Cylinders	12 60° Vee form	Total Oil Capacity	177 L
Cycle	4 Stroke	Oil Type	API-CH-4 or ACEA E5
Aspiration	Turbocharged	AIR SYSTEM	
Cooling Method	Water cooled	Air Filter Type	Dry Element
Governing Type	Electronic	Combustion Air Flow (PRP)	100 m³/min
Governing Class	G2 - ISO 8528 Part 1	Combustion Air Flow (ESP)	110 m³/min
Compression Ratio	13:1	Max Air Filter Intake Restriction	4.0 kPa
Displacement	45.8 L		
Bore/Stroke	160 x 190 mm		
Dynamic Charging Alternator	40AMP, 24V		

COOLING SYSTEM		Exhaust System	
Total Coolant Capacity (L)	210 L	Muffler Type	Industrial Grade
Cooling Fan Air Flow	1212 m³/ min	Max. Back Pressure	5 kPa
Radiator Fan Load	64 kW	Exhaust Gas Flow (PRP/ESP)	280 m³/ min
Cooling system design	Above 50°C	Exhaust Gas Temperature	< 470°C
Heat Radiation to Room (PRP)	100 kW		

Comply with Standards	
ISO 3046, BS 5514, DIN 6271, NEMA-MGI, DIN EN, BS 5000, IEC 60034, IEC 60947-2	

PL Generator Set Reliable, Premium Power Supply

Features & Benefits:

- PL Gen set is driven by Perkins Engine, a world-renowned manufacturer with over 85 years of experience and a strong reputation for innovation, quality, and customer support across 182 countries through 3,500 outlets.
- PL Gen set is equipped with a Leroy Somer Alternator, one of the leading global alternator manufacturers, offering more than 99 years of experience, over 120 active patents, operations in more than 40 countries, and over 80 service centers.
- PL Gen set comes with a DSE Control System, supplied by one of the UK's leading manufacturers, with more than 40 years of expertise in advanced, reliable, and user-friendly generator controllers.
- Low fuel consumption, providing greater efficiency and reducing overall fuel operating costs.
- Compact and durable construction, minimizing transportation requirements and reducing storage expenses.
- Engineered with a space-efficient configuration, making it suitable for critical applications where installation space comes at a premium.
- Low noise and reduced vibration levels, ideal for sensitive and critical environments where noise control is essential.
- Easy servicing and extended operating life, helping reduce maintenance requirements and associated service costs.
- Every unit is rigorously tested, including load, cooling, vibration, and noise testing, before being delivered to the customer.
- Designed for simple operation and reliable performance, even under demanding environmental and harsh operating conditions.
- Fitted with a built-in fuel tank providing sufficient capacity for approximately 8 to 10 hours of operation.
- Fully engineered with a wide selection of optional accessories available to meet different operational requirements.

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Branch 1 - Iraq - Baghdad - Camp Sarah - Near Square52 - Opposite Al-Jumhuriya Preparatory Girls school
Branch 2 - Iraq - Baghdad - Khalid Ibn Al-Walid Street - Opposite the Martyrs Foundation



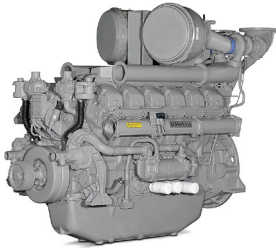
DAR AL-EBDA'A

POWER GENERATORS COMPANY



Perkins® TECHNICAL DATA SHEET

PL1700



Perkins Engine
4012-46TAG3A

Engine Fuel System

Recommended Fuel	Class A2 Diesel
Fuel Consumption Standby	405 L/hr
Fuel Consumption 100% PRP	370 L/hr
Fuel Consumption 75% PRP	275 L/hr
Fuel Consumption 50% PRP	187 L/hr



Leroy Somer
LSA 52.3 S5

ALTERNATOR SPECIFICATIONS

Alternator Make /Model	Leroy Somer LSA 52.3 S5
AVR Model	R449
Number of Poles	4
Number of Winding Leads	12
Type of Bearing	Single Bearing
Insulation Class - Temp Rise	Cont. H - 125/40°C
Ingress Protection Rating	IP 23
Excitation System	AREP
Voltage Regulation	+ 0.5%
Harmonic Coefficient THF	< 2%
Tel. influence TIF	< 50
Cooling air flow	1.8 m³/ Sec

WARRANTY

1. WARRANTY POLICY

DPG generators are covered for 1,000 operating hours or one year, whichever comes first, against manufacturing defects. Warranty excludes improper fuel, misuse, incorrect operation, and maintenance-related failures. Minimum operating load: 60%.

2. DOCUMENTATION

Each generator is supplied with Operation & Maintenance Manual, GAD, Wiring Diagram, and FAT Report.

3. OPTIONAL FEATURES

Engine: Heavy-Duty Air Filter, Coolant/Oil Heater, Fuel & Water Separator, Oil Rotary Pump.

Alternator: Anti-Condensation Heater, PMG + AVR, Double Bearing, RTD Sensors.

Cooling & Control: 55°C or Remote Radiator, AMF/Parallel Operation, Remote Annunciator, 4-Pole Manual/Motorized Breaker.

ATS & Battery: Contactor or Motorized ATS, Nickel-Cadmium or Maintenance-Free Battery, Charger, Selector Switch and Current Meter. Exhaust: Residential, Critical or Hospital Grade Mufflers.

Available Voltages: 400/230V, 480/277V, 380/220V, 440/254V, 416/240V, 220/127V, 208/120V.

Due to continuous research & product development, we reserve the right to change specification with out notice



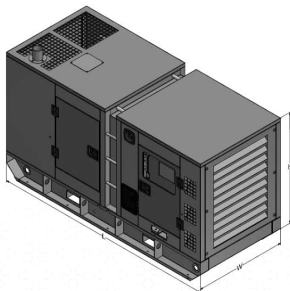
DSE 7320MKII

Controller Make & Model | DeepSea 7320MKII

Operation Mode	AMF
Display	Graphic Back-lit LCD (132x64) pixels
Ingress Protection Rating	IP65
Binary Inputs/Outputs	9 / 8
Analog Inputs	4
Measurement	Vac, A, Hz, kVA, kW, Vdc
Event Log	Alarms log, Hrs log
Communication	USB

Enclosure Type

Drainage	Fuel and Water Drainage Provision
Transportation	Tested Single Point Lifting Facility & Forklift Pockets
Ingress Protection	IP 23
Lifting	ISO Standard Lifting
Canopy RAL Color	RAL 9010 - Powder coated
Base frame RAL Color	RAL 9011 - Powder coated
Noise Pressure level	TBD



Perkins® LEROY-SOMER™



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4000 Series 4012-46TAG3A Diesel Engine – ElectropaK

1583 kWm @ 1500 rpm net standby power

The Perkins® 4000 Series family of 6, 8, 12 and 16 cylinder diesel engines, designed to address today's uncompromising demands within the power generation industry with particular aim at the standby market sector.

Developed from a proven engine range that offers superior performance and reliability.

The 4012-46TAG3A ElectropaK is a turbocharged, air-to-air charge cooled, 12 cylinder diesel engine.

Offered with either temperate or tropical cooling packages (with or without fuel oil cooling). Their premium design and specification features provide economic and durable operation as well as exceptional power to weight ratio, improved serviceability, low gaseous emissions, overall performance and reliability essential to the power generation market.



Specification				
Number of cylinders	12 60° Vee form			
Bore and stroke	160 x 190 mm		6.3 x 7.5 in	
Displacement	45.842 litres		2797 in ³	
Aspiration	Turbocharged and air to air charge cooled			
Cycle	4 stroke			
Combustion system	Direct injection			
Compression ratio	13:1			
Rotation	Anti-clockwise, viewed from flywheel end			
Total lubricating capacity	177 litres		46.7 US gal	
Cooling system	Water-cooled			
	Temperate		Tropical	
Total coolant capacity	207 litres	54.6 US gal	210 litres	55.5 US gal

www.perkins.com

Photographs are for illustrative purposes only and may not reflect final specification.
All information in this document is substantially correct at time of printing and may be altered subsequently.
Final weight and dimensions will depend on completed specification.

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 **Perkins®**

THE HEART OF EVERY GREAT MACHINE

4000 Series 4012-46TAG3A Diesel Engine – ElectropaK

1583 kWm @ 1500 rpm net standby power

Features and benefits

Dependable power

- Individual 4 valve cylinder heads giving optimised gas flows
- Unit fuel injectors ensure ultra fine fuel atomisation and hence controlled rapid combustion
- Commonality of components with other engines in the 4000 Series family for reduced stocking levels
- Capable emissions of TA Luft (1986)

Low operating costs

- Oil change service intervals are set at 500 hours as standard
- Designed to provide low cost of ownership, simple maintenance and reduced downtime
- Class leading warranty
Prime power - 12 months unlimited hours. For engines that operate less than 6,000 hours the warranty is available for two years or until the application reaches 6,000 hours (whichever is sooner).
Standby power - three years or 1,500 hours (whichever is sooner).
See Perkins Warranty Policy for further details
- Perkins Platinum Protection - comprehensive cover from as little as 5 percent* of the cost of your engine
Talk to your local distributor or visit www.perkins.com/platinum for more details

World class product support

- Our experienced global network of distributors and dealers, fully trained engine experts deliver total service support around the clock, 365 days a year. They have a comprehensive suite of web based tools at their disposal, covering technical information, parts identification and ordering systems, all dedicated to maximising the productivity of your engine
- Perkins actively pursues product support excellence by insisting our distribution network invest in their territory to provide customers with a consistent quality of support across the globe
- Throughout the entire life of a Perkins engine, we provide access to genuine parts giving 100% reassurance that you receive the very best in terms of quality for lowest possible cost, wherever your Perkins powered machine is operating in the world
To find your local distributor: www.perkins.com/distributor

*Terms and conditions apply

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 **Perkins®**

THE HEART OF EVERY GREAT MACHINE

4000 Series 4012-46TAG3A Diesel Engine – ElectropaK

1583 kWm @ 1500 rpm net standby power

Technical information

Air inlet system

- Mounted air filter and turbocharger

Fuel system

- Direct fuel injection system with fuel lift pump
- Digital governing to ISO 8528-5 Class G2 with isochronous capability
- Full flow spin-on filters

Lubrication system

- Wet full aluminium sump with filler and dipstick
- Full flow spin-on oil filters

Cooling system

- Two twin thermostats
- System designed for ambient temperatures of up to 50°C

Electrical equipment

- 24V starter motor and 24V alternator with integral regulator and DC output
- Turbine inlet temperature protection
- Twin high coolant temperature protection switch
- Twin low oil pressure protection switch

Flywheel and housing

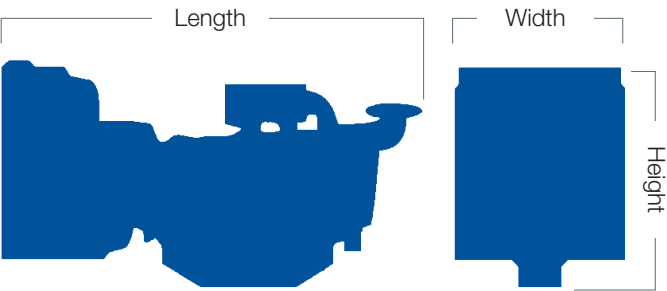
- Flywheel to SAE J620 Size 18
- SAE 0 flywheel housing

Optional equipment

- 4 metre wiring harness
- Secondary electric start
- Immersion heater
- Single exhaust outlet pipe
- Exhaust counter flanges
- Temperate radiator kit
- 21" flywheel

4000 Series 4012-46TAG3A Diesel Engine – Electropak

1583 kWm @ 1500 rpm net standby power



Engine package weights and dimensions				
	Temperate		Tropical	
Length	3915 mm	154 in	3883 mm	153 in
Width	2198 mm	87 in	2164 mm	85 in
Height	2259 mm	89 in	2610 mm	85 in
Weight (dry)	4400 kg	9700 lb	4400 kg	9700 lb

4000 Series 4012-46TAG3A Diesel Engine – Electropak

1583 kWm @ 1500 rpm net standby power

Speed rpm	Type of operation	Typical generator output (Net)		Engine power			
				Gross		Net	
		kVA	kWe	kWm	hp	kWm	hp
1500	Baseload power	1425	1140	1260	1690	1200	1609
	Prime power	1710	1368	1500	2012	1440	1931
	Standby (maximum)	1880	1504	1643	2203	1583	2123

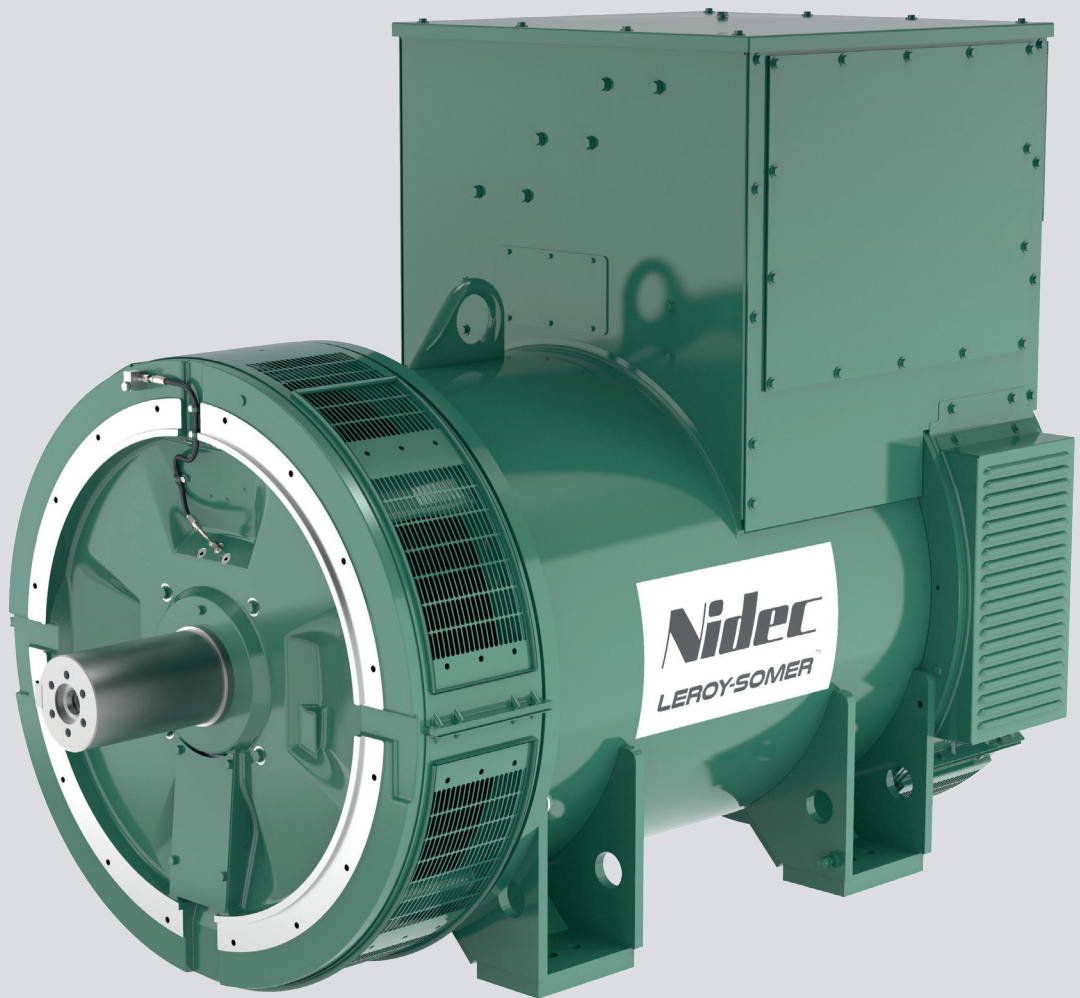
The above ratings represent the engine performance capabilities guaranteed within plus or minus 3% at the reference conditions equivalent to those specified in ISO 8528/1, ISO 3046/1, BS 5514/1.

Rating conditions: 25°C air inlet temperature, barometric pressure 100 kPa, relative humidity 30%. Please consult your distributor or the factory for ratings in other ambient conditions. *Note: For full ratings please refer to Perkins Engines Company Limited. All electrical ratings are based on an average alternator efficiency and a power factor of 0.8.* **Fuel specification:** BS2869: Class A2.

Rating definitions

Baseload power: Power available for continuous full load operation. No overload is permitted. **Prime power:** Power available for variable load with an average load factor not exceeding 80% of the prime power rating in any 24 hour period. Overload of 10% permitted for 1 hour in every 12 hours operation. **Standby (maximum):** Power available at variable load in the event of a main power network failure up to a maximum of 500 hours per year. No overload is permitted.

Percent of prime power	Fuel consumption at 1500 rpm g/kWh	Fuel consumption at 1500 rpm l/hr
Standby (maximum)	211	405
Prime power	208	370
Continuous baseload	207	310
75%	206	275
50%	202	187



LSA 52.3

Low Voltage Alternator - 4 pole

1860 to 2750 kVA - 50 Hz / 2230 to 3400 kVA - 60 Hz

Electrical and mechanical data

LEROY-SOMER™

Nidec
All for dreams

The best of performance

Nidec Leroy-Somer LSA 52.3 alternator has been designed to offer you the best power generation performances. With its meticulous design and optimized architecture, the LSA 52.3 strikes the perfect balance between compactness, reliability, performance and longevity.

Whatever your application, the LSA 52.3 will meet your needs and will adapt to all situations.

Standards

Nidec Leroy-Somer LSA 52.3 alternator meets all key international standards and regulations, including IEC 60034, NEMA MG 1.32-33, ISO 8528-3, CSA C22.2 n°100-14 and UL 1446 (UL 1004 on request). Also compliant with IEC 61000-6-2, IEC 61000-6-3, IEC 61000-6-4, VDE 0875G, VDE 0875N and EN 55011, group 1 class A for European zone.

Nidec Leroy-Somer LSA 52.3 alternator can be integrated in EC marked generator set, and bears EC, UKCA and CMIM markings. It is designed, manufactured and marketed in an ISO 9001 and ISO 14001 quality assurance environment.

Electrical characteristics and performances

- Class H insulation
- 2/3 pitch winding, standard 6-wire (6S)
- Voltage range:
 - 50 Hz: 380V - 400V - 415V
 - 60 Hz: 440V - 480V
- High efficiency and motor starting capacity
- Other voltages are possible with optional adapted windings:
 - 50 Hz: 440V (no. 7), 500V (no. 9), 600V (no. 23), 690V (no. 52)
 - 60 Hz: 380V and 416V (no. 8), 600V (no. 9), 690V (no. 22)

Excitation and regulation system

Excitation system			Regulation options		
AVR	AREP + PMI	PMG	C.T. Current transformer for paralleling	Mains paralleling	Remote voltage potentiometer
D550	Standard	Option	√	√	√

3-phase sensing is included as a standard with digital regulators.

Protection system and options

- The LSA 52.3 is IP 23
- Complete 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%)
 - Reinforced winding protection for harsh environments and relative humidity greater than 95% (derating 6%)
 - Space heater
 - Protection or metering CTs
 - Thermal protection for stator winding and/or bearings (PT100)

Mechanical construction

- Compact and rigid assembly to better withstand generator vibrations
- Steel frame
- Cast iron flanges and shields
- Two-bearing and single-bearing versions designed to be suitable for engines on the market
- Half-key balancing
- Regreasable bearings
- Clockwise rotation in standard

Terminal box design

- Easy access to the voltage regulator and to the connections
- Possible inclusion of accessories for paralleling, protection and measurement

General characteristics

Insulation class	H	Excitation system	AREP + PMI
Winding pitch	2/3 (wind. 6S)	AVR type	D550
Number of wires	6	Voltage regulation (*)	± 0.25%
Protection	IP 23	Short-circuit current	300% (3 IN) : 10s
Altitude	≤ 1000 m	Total Harmonic Distortion THD (**) in no-load	< 4%
Overspeed	2250 R.P.M.	Waveform: NEMA = TIF (**)	< 50
Air flow	2.5 m³/s (50 Hz) - 2.8 m³/s (60 Hz)	Waveform: I.E.C. = THF (**)	< 2%

(*) steady state (**) between phases

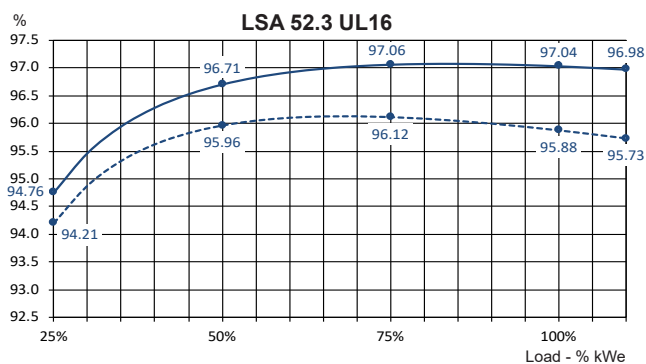
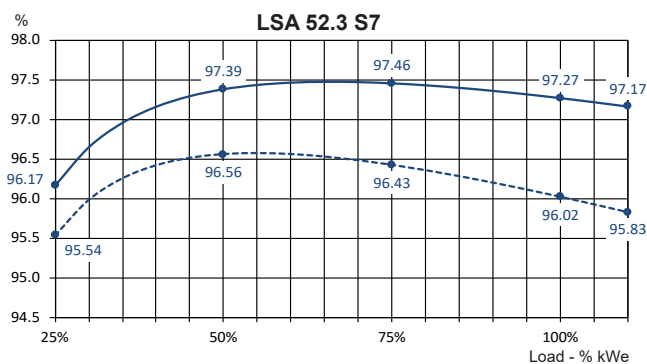
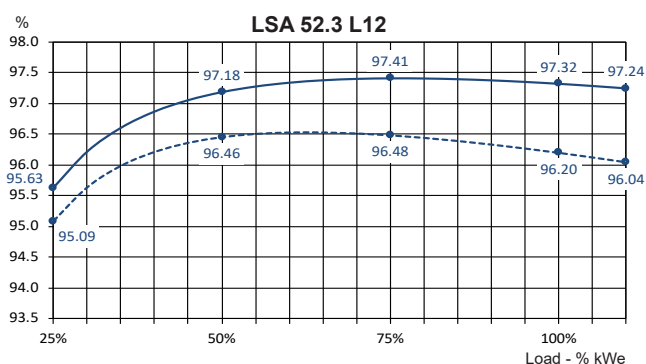
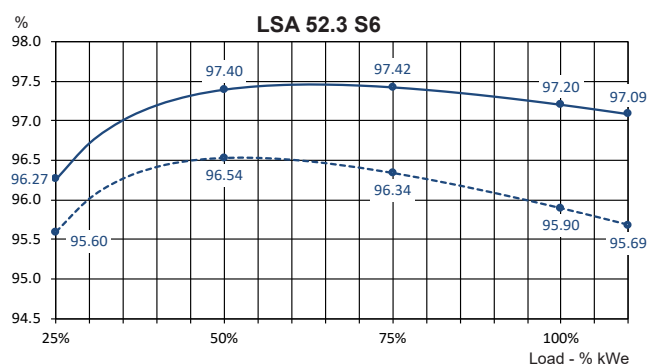
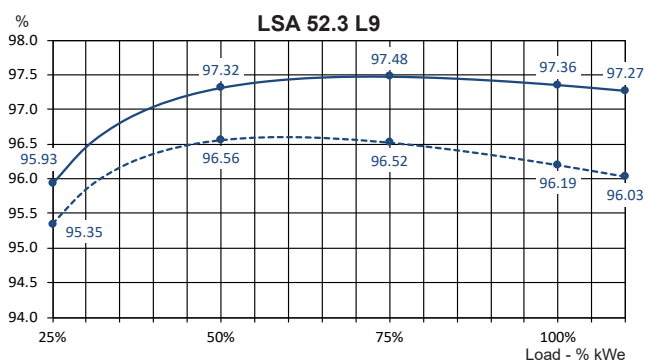
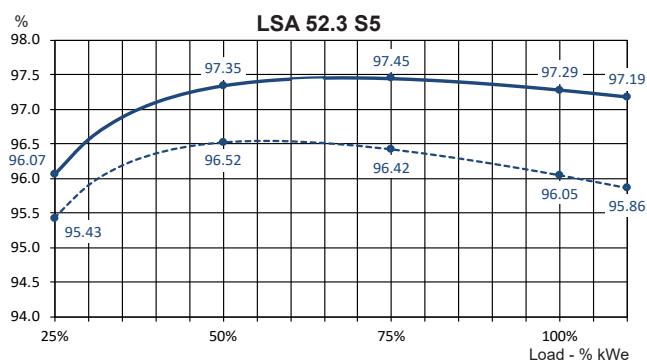
Ratings 50 Hz - 1500 R.P.M.

kVA / kW - P.F. = 0.8													
Duty/T°C		Continuous duty/40°C			Continuous duty/40°C			Stand-by/40°C			Stand-by/27°C		
Class/T°K		H/125°K			F/105°K			H/150°K			H/163°K		
Phase		3 ph.			3 ph.			3 ph.			3 ph.		
Y		380V	400V	415V	380V	400V	415V	380V	400V	415V	380V	400V	415V
LSA 52.3 S5	kVA	1860	1860	1860	1696	1696	1696	1953	1953	1953	2046	2046	2046
	kW	1488	1488	1488	1357	1357	1357	1562	1562	1562	1637	1637	1637
LSA 52.3 S6	kVA	2000	2000	2000	1824	1824	1824	2100	2100	2100	2200	2200	2200
	kW	1600	1600	1600	1459	1459	1459	1680	1680	1680	1760	1760	1760
LSA 52.3 S7	kVA	2200	2200	2200	2006	2006	2006	2310	2310	2310	2420	2420	2420
	kW	1760	1760	1760	1605	1605	1605	1848	1848	1848	1936	1936	1936
LSA 52.3 L9	kVA	2360	2360	2360	2152	2152	2152	2478	2478	2478	2596	2596	2596
	kW	1888	1888	1888	1722	1722	1722	1982	1982	1982	2077	2077	2077
LSA 52.3 L12	kVA	2560	2560	2560	2335	2335	2335	2688	2688	2688	2816	2816	2816
	kW	2048	2048	2048	1868	1868	1868	2150	2150	2150	2253	2253	2253
LSA 52.3 UL16	kVA	2750	2750	2750	2508	2508	2508	2888	2888	2888	3025	3025	3025
	kW	2200	2200	2200	2006	2006	2006	2310	2310	2310	2420	2420	2420

Ratings 60 Hz - 1800 R.P.M.

kVA / kW - P.F. = 0.8													
Duty/T°C		Continuous duty/40°C			Continuous duty/40°C			Stand-by/40°C		Stand-by/27°C			
Class/T°K		H/125°K			F/105°K			H/150°K		H/163°K			
Phase		3 ph.			3 ph.			3 ph.		3 ph.			
Y		440V	480V		440V	480V		440V	480V		440V	480V	
LSA 52.3 S5	kVA	2046	2232		1866	2036		2149	2344		2250	2455	
	kW	1637	1786		1493	1629		1719	1875		1800	1964	
LSA 52.3 S6	kVA	2200	2400		2007	2189		2310	2520		2420	2640	
	kW	1760	1920		1606	1751		1848	2016		1936	2112	
LSA 52.3 S7	kVA	2420	2640		2207	2408		2541	2772		2662	2904	
	kW	1936	2112		1766	1926		2033	2218		2130	2323	
LSA 52.3 L9	kVA	2596	2832		2368	2583		2726	2974		2855	3115	
	kW	2077	2266		1894	2066		2181	2379		2284	2492	
LSA 52.3 L12	kVA	2850	3250		2599	2964		2993	3413		3135	3575	
	kW	2280	2600		2079	2371		2394	2730		2508	2860	
LSA 52.3 UL16	kVA	3100	3400		2827	3101		3255	3570		3410	3740	
	kW	2480	2720		2262	2481		2604	2856		2728	2992	

Efficiencies 400V - 50 Hz (--- P.F.: 0.8) (— P.F.: 1)



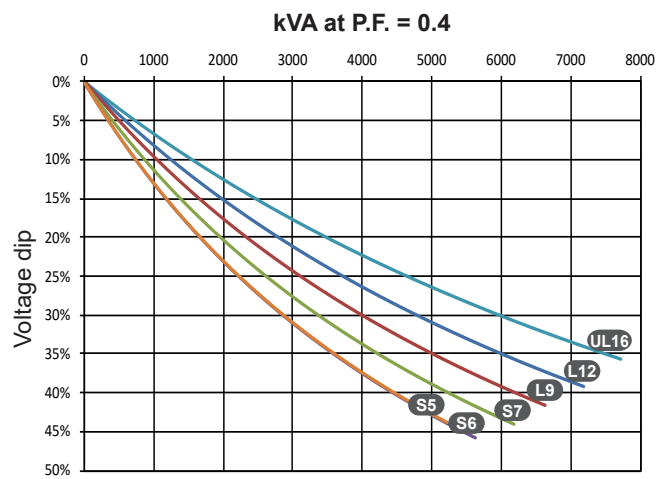
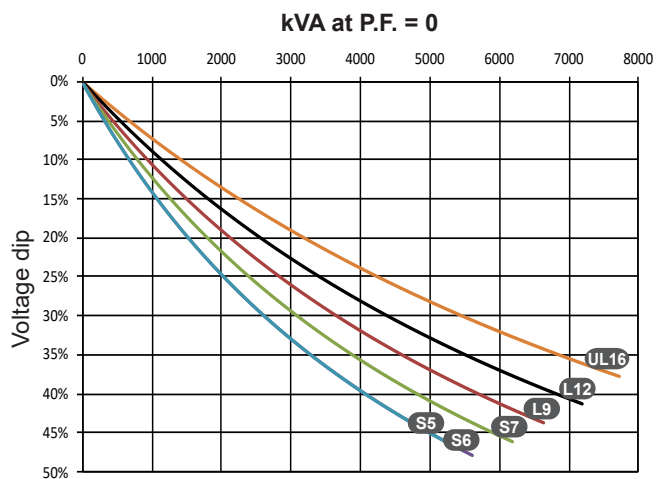
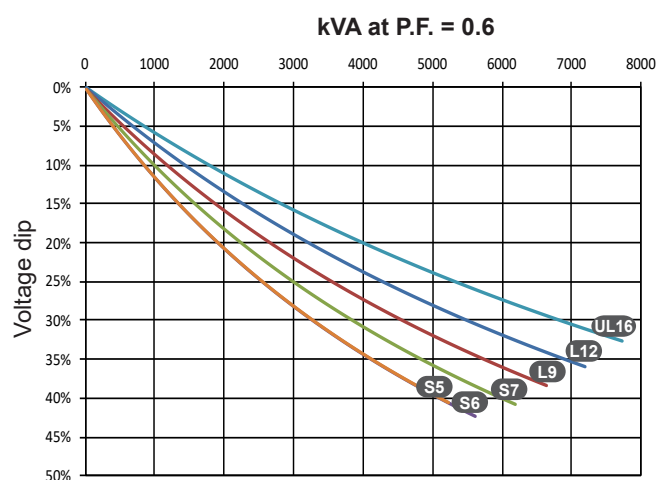
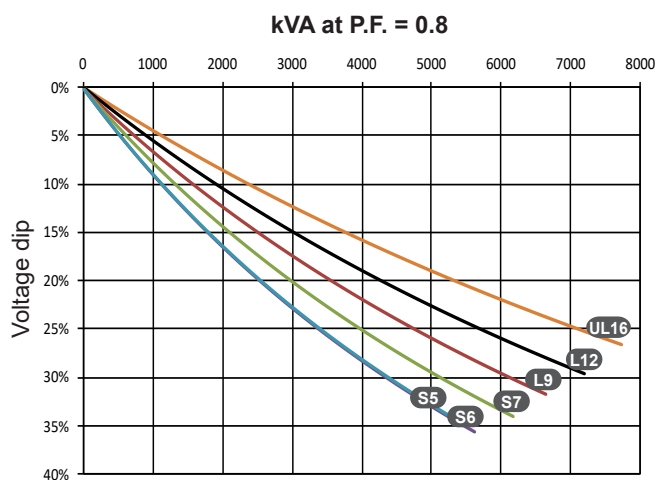
Reactances (%). Time constants (ms) - Class H / 400 V

	S5	S6	S7	L9	L12	UL16
Kcc Short-circuit ratio	0.35	0.32	0.35	0.39	0.42	0.51
Xd Direct-axis synchronous reactance unsaturated	367	380	376	344	313	267
Xq Quadrature-axis synchronous reactance unsaturated	187	194	192	175	160	136
T'do No-load transient time constant	2760	2760	2870	2990	2760	2920
X'd Direct-axis transient reactance saturated	28.7	30.9	28.9	26.1	23.6	20.3
T'd Short-circuit transient time constant	254	264	260	267	245	261
X''d Direct-axis subtransient reactance saturated	15	16.4	14.8	13.2	12.1	10.5
T''d Subtransient time constant	23	23	22	22	13	14
X''q Quadrature-axis subtransient reactance saturated	15.6	16.9	15.4	13.7	12.5	10.8
X0 Zero sequence reactance	2.3	2.5	2.6	2.5	2.7	2.6
X2 Negative sequence reactance saturated	15.3	16.7	15.1	13.4	12.3	10.6
Ta Armature time constant	28	28	28	28	29	30

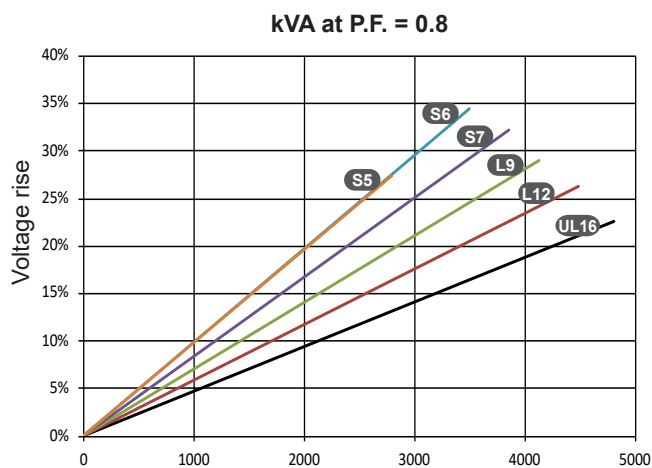
Other class H/400 V data

io (A) No-load excitation current	1.2	1.2	1.2	1.2	1.3	1.4
ic (A) On-load excitation current	4.4	4.7	4.6	4.4	4.1	3.9
uc (V) On-load excitation voltage	45	47	47	44	42	38
kW No-load losses	15	15	17	20	24	26
kW Heat dissipation	68	76	79.5	79.2	81	100

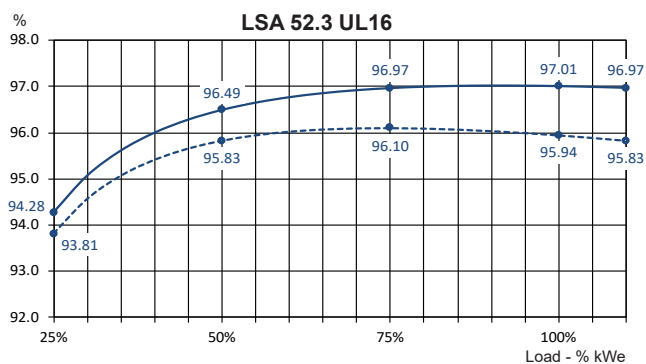
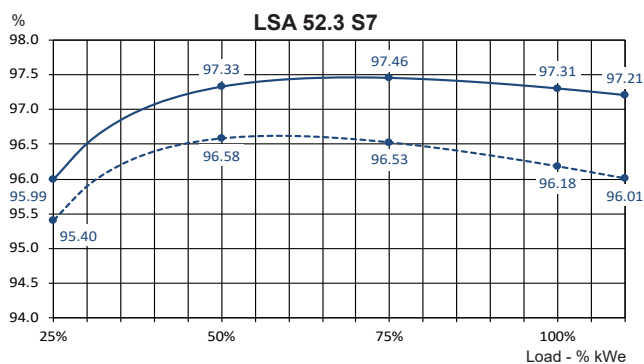
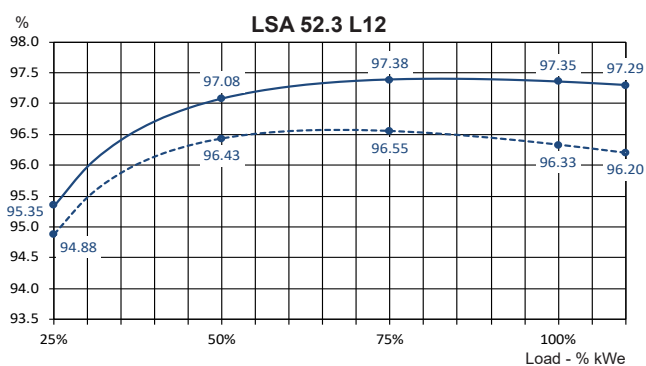
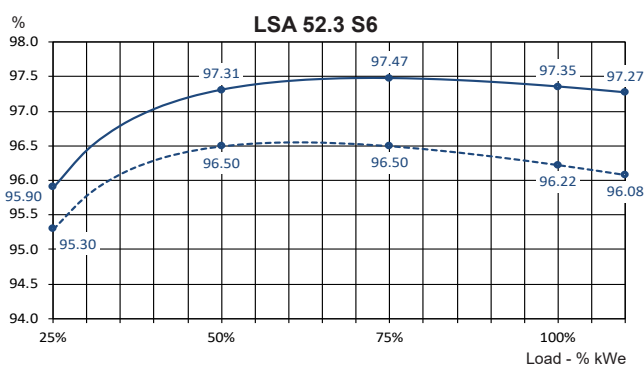
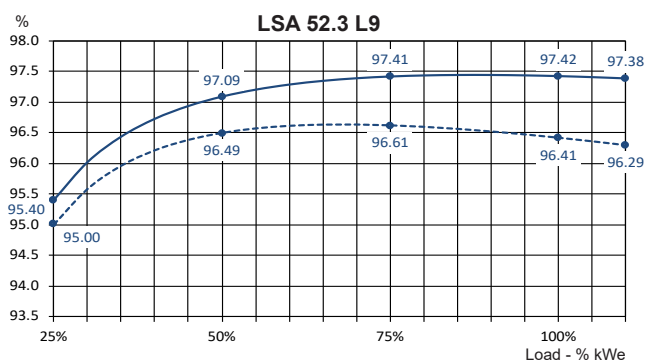
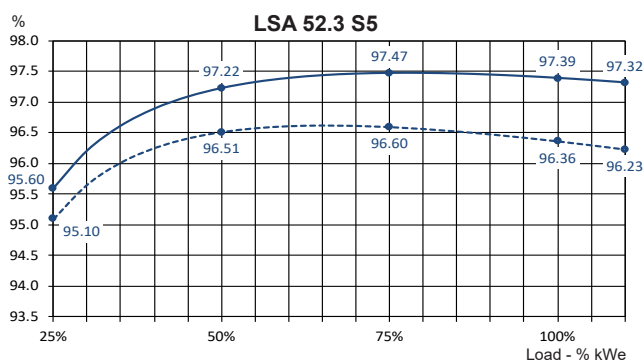
Transient voltage variation at load inrush: 400V - 50 Hz



Transient voltage variation at load rejection: 400V - 50 Hz



Efficiencies 480V - 60 Hz (--- P.F.: 0.8) (— P.F.: 1)



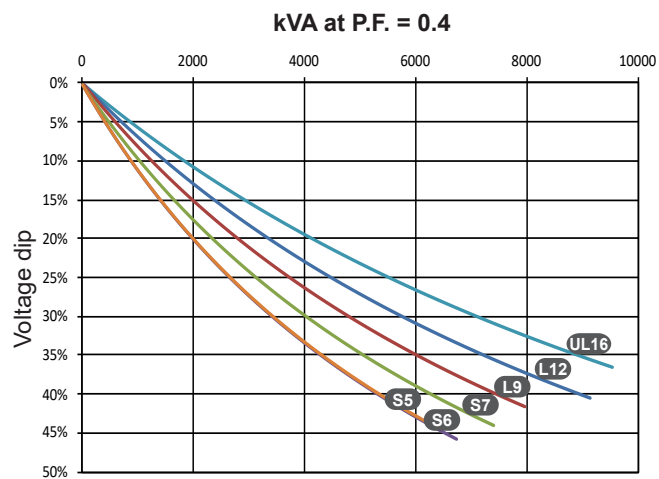
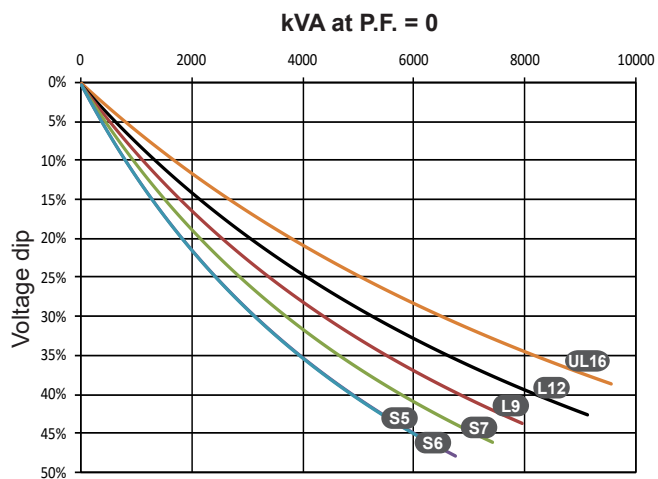
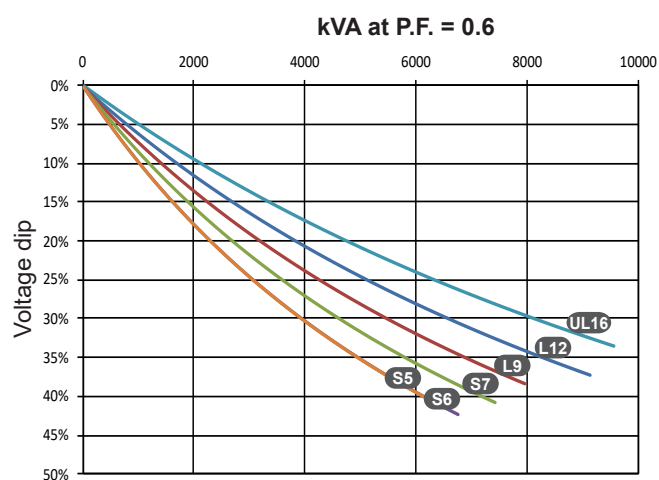
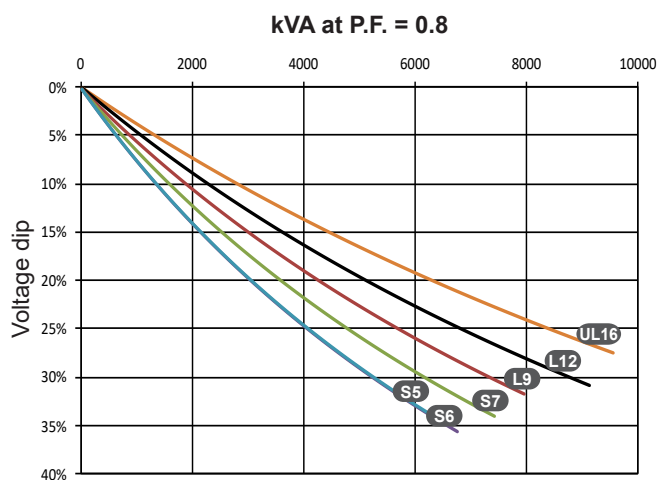
Reactances (%). Time constants (ms) - Class H / 480 V

	S5	S6	S7	L9	L12	UL16
Kcc Short-circuit ratio	0.35	0.32	0.35	0.39	0.40	0.49
Xd Direct-axis synchronous reactance unsaturated	367	380	376	344	331	275
Xq Quadrature-axis synchronous reactance unsaturated	187	194	192	175	169	140
T'do No-load transient time constant	2760	2760	2870	2990	2760	2920
X'd Direct-axis transient reactance saturated	28.7	30.9	28.9	26.1	25	20.9
T'd Short-circuit transient time constant	254	265	260	267	245	261
X''d Direct-axis subtransient reactance saturated	15	16.4	14.8	13.2	12.8	10.8
T''d Subtransient time constant	23	23	22	22	13	14
X''q Quadrature-axis subtransient reactance saturated	15.6	16.9	15.4	13.7	13.2	11.1
X0 Zero sequence reactance	2.3	2.6	2.6	2.5	2.9	2.7
X2 Negative sequence reactance saturated	15.3	16.7	15.1	13.4	13	11
Ta Armature time constant	28	28	28	28	29	30

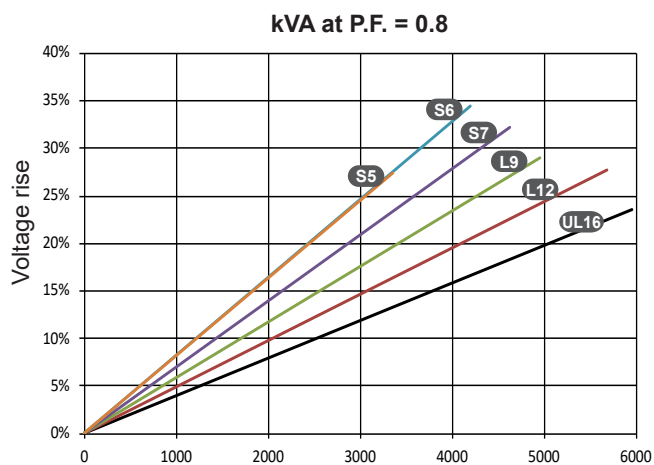
Other class H/480 V data

io (A) No-load excitation current	1.1	1.1	1.2	1.2	1.2	1.3
ic (A) On-load excitation current	4.2	4.5	4.5	4.2	4.2	3.7
uc (V) On-load excitation voltage	43	46	45	43	42	36
kW No-load losses	21	21	24	28	33	36
kW Heat dissipation	73	82	86	87	96	120

Transient voltage variation at load inrush: 480V - 60 Hz

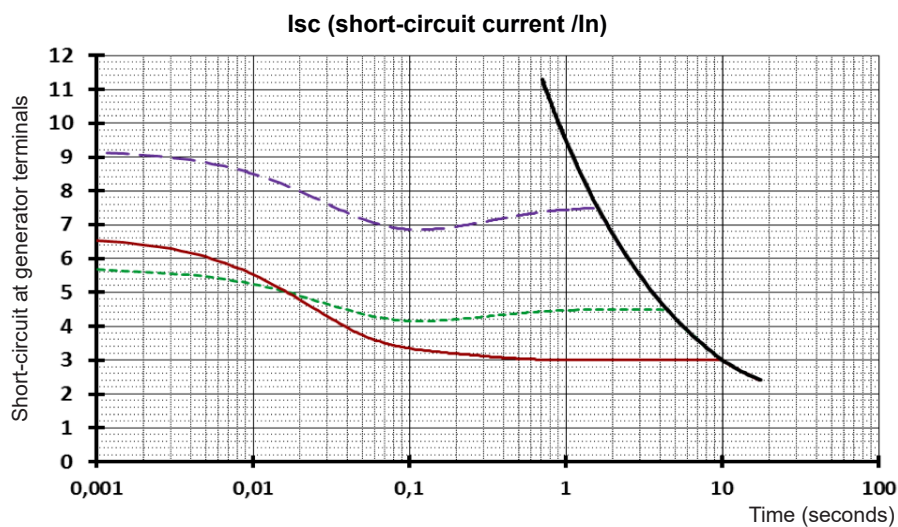


Transient voltage variation at load rejection: 480V - 60 Hz

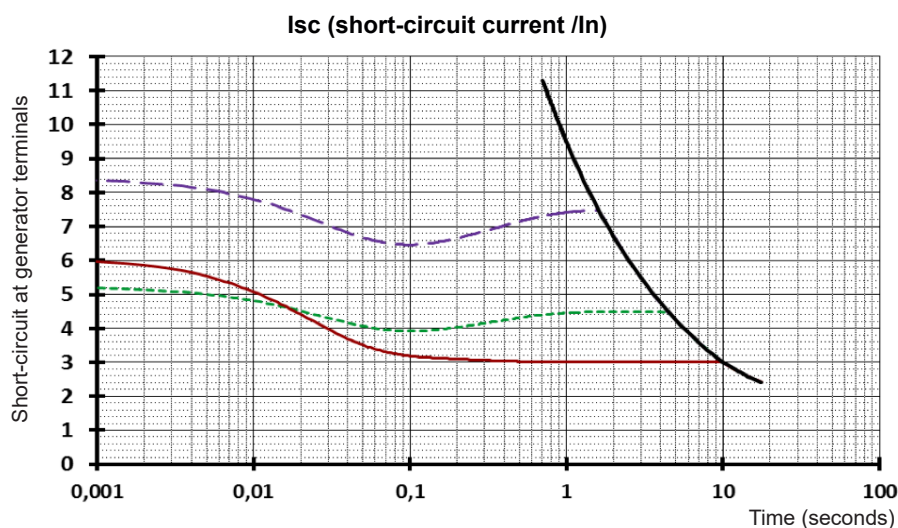


Short-circuit curves at rated speed (star connection Y)

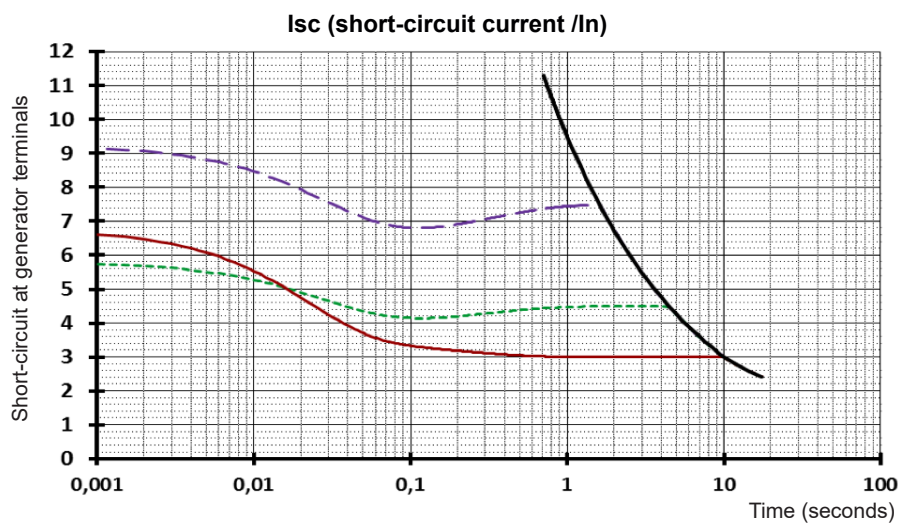
LSA 52.3 S5



LSA 52.3 S6



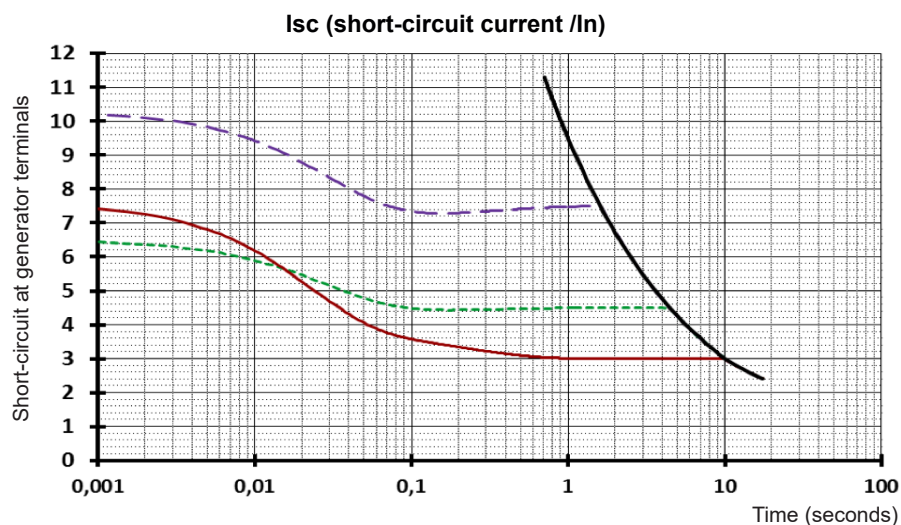
LSA 52.3 S7



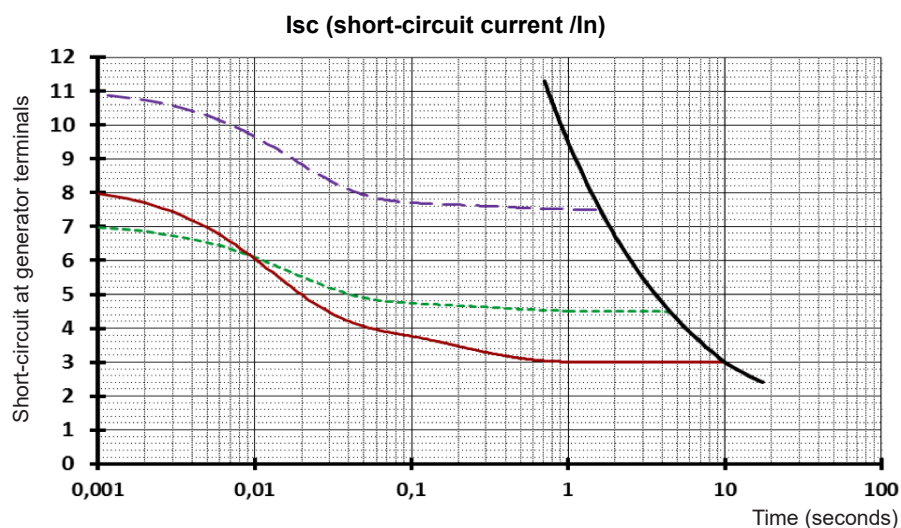
- Symetrical phase to neutral short-circuit
- - - Symetrical two-phase short-circuit
- Symetrical three-phase short-circuit
- Thermal limit curve

Short-circuit curves at rated speed (star connection Y)

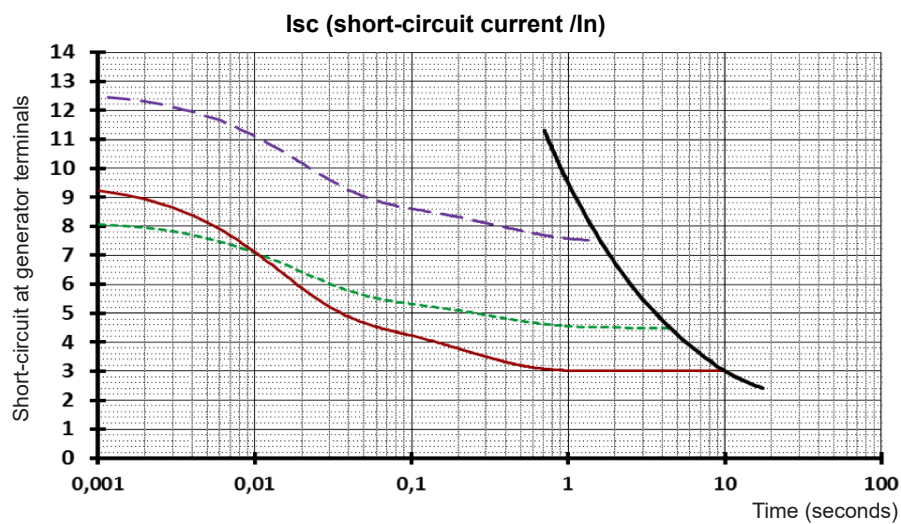
LSA 52.3 L9



LSA 52.3 L12

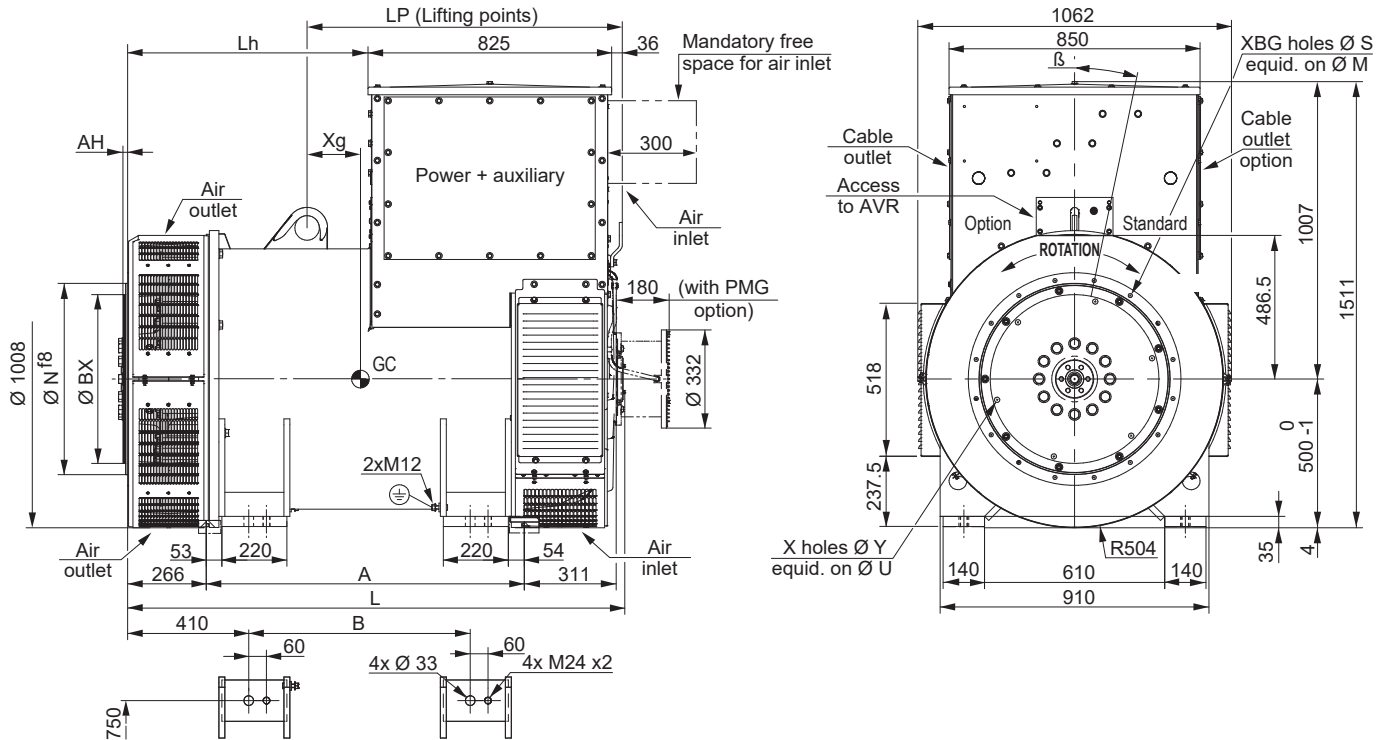


LSA 52.3 UL16



- Symetrical phase to neutral short-circuit
- - Symetrical two-phase short-circuit
- Symetrical three-phase short-circuit
- Thermal limit curve

Single-bearing dimensions



Dimensions (mm) and weight (kg)

Type	L	B	A	Lh	LP	Xg*	Weight*
LSA 52.3 S5/S6	1683	750	1077	814	1067.5	175	3748
LSA 52.3 S7	1683	750	1077	814	1067.5	194	3996
LSA 52.3 L9	1883	950	1277	1014	1067.5	64	4446
LSA 52.3 L12	1883	950	1277	1014	1067.5	106	4944
LSA 52.3 UL16	2033	1100	1427	1164	1412.5	389	5751

* Values for S.A.E. 0/18

Flange (mm)

S.A.E.	N	M	XBG	S	β°
0	647.7	679.5	16	14	11°15'
00	787.4	850.9	16	14	11°15'

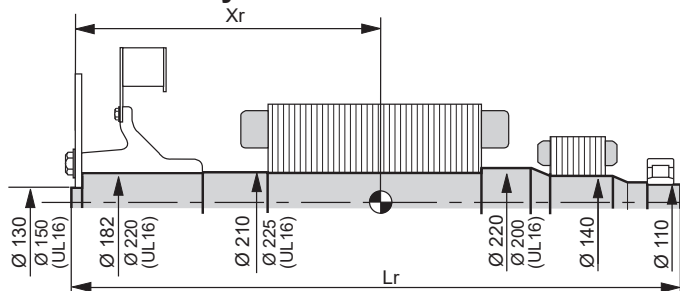
Coupling

Flange S.A.E.	0	00
Flex plate S.A.E. 24		X
Flex plate S.A.E. 21		X
Flex plate S.A.E. 18	X	X

Flex plate (mm)

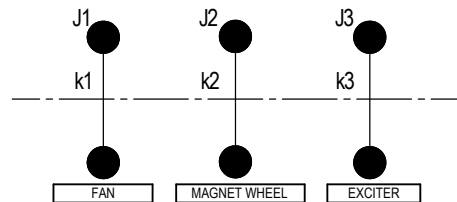
S.A.E.	BX	U	X	Y	AH
24	733.4	692.1	12	21	0
21	673.1	641.3	12	18	0
18	571.5	542.9	6	18	15.8

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²) : (4J = MD²)

Flex plate	S.A.E. 18				S.A.E. 21			
Type	Xr	Lr	M	J	Xr	Lr	M	J
LSA 52.3 S5/S6	718	1689	1408	42.2	702	1689	1412	43.1
LSA 52.3 S7	741	1689	1501	45.7	725	1689	1505	46.6
LSA 52.3 L9	810	1889	1693	51	794	1889	1697	51.9
LSA 52.3 L12	859	1889	1879	58.1	843	1889	1883	59
LSA 52.3 UL16	954	2039	2188	68.5	937	2039	2192	69.4

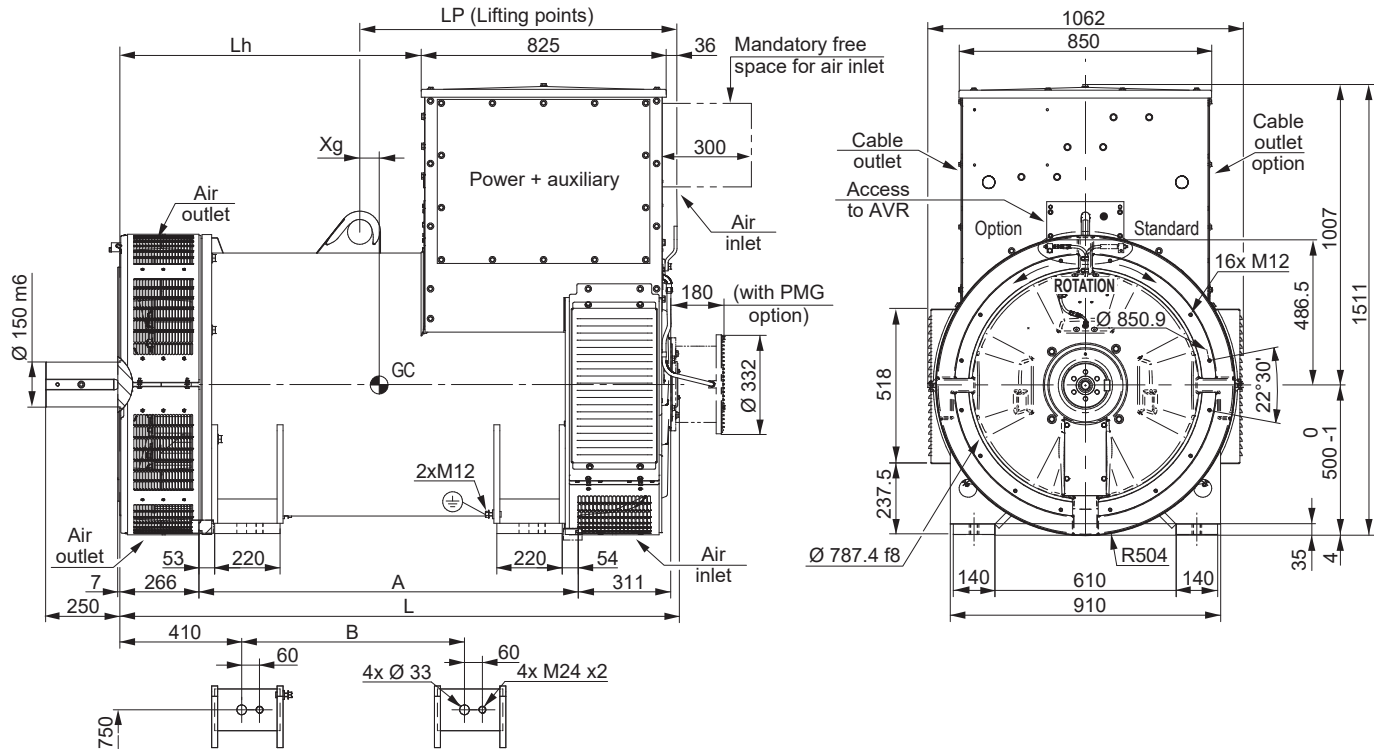


Type	S.A.E.	Torsional rigidity					
		[Nm/rad]			(kg.m²)		
		k1	k2	k3	J1	J2	J3
S5/S6	18	5.47 10E7	2.98 10E7	1.60 10E7	9.5	31.1	1.5
	21	6.66 10E7	2.98 10E7	1.60 10E7	10.4	31.1	1.5
S7	18	5.47 10E7	2.92 10E7	1.68 10E7	9.5	34.7	1.4
	21	6.66 10E7	2.92 10E7	1.68 10E7	10.4	34.7	1.4
L9	18	5.47 10E7	2.83 10E7	1.52 10E7	9.5	40	1.6
	21	6.66 10E7	2.83 10E7	1.52 10E7	10.4	40	1.6
L12	18	5.47 10E7	2.71 10E7	1.67 10E7	9.5	47.2	1.4
	21	6.66 10E7	2.71 10E7	1.67 10E7	10.4	47.2	1.4
UL16	18	5.47 10E7	2.56 10E7	1.68 10E7	9.5	57.6	1.4
	21	6.66 10E7	2.56 10E7	1.68 10E7	10.4	57.6	1.4

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D drawings can be downloaded from the Leroy-Somer site, 3D drawing files are available upon request.

The torsional analysis of the transmission is imperative. All values are available upon request.

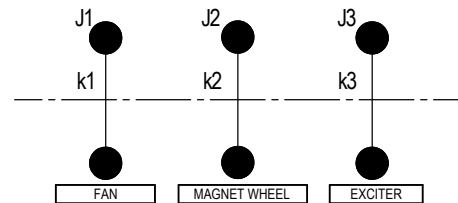
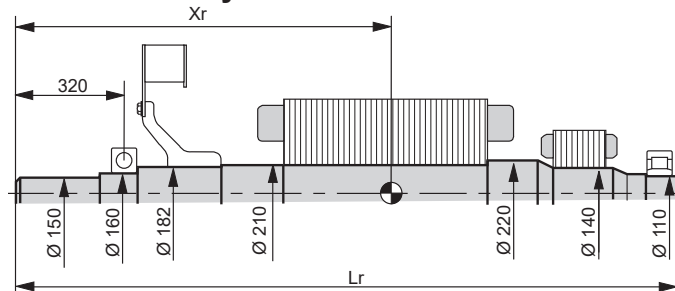
Two-bearing dimensions



Dimensions (mm) and weight (kg)

Type	L	B	A	Lh	LP	Xg	Weight
LSA 52.3 S5/S6	1683	750	1077	814	1067.5	179	3742
LSA 52.3 S7	1683	750	1077	814	1067.5	197	3990
LSA 52.3 L9	1883	950	1277	1014	1067.5	68	4441
LSA 52.3 L12	1883	950	1277	1014	1067.5	109	4939
LSA 52.3 UL16	2033	1100	1427	1164	1412	392	5691

Torsional analysis data



Centre of gravity: Xr (mm), Rotor length: Lr (mm), Weight: M (kg), Moment of inertia: J (kgm²) : (4J = MD²)

Type	Xr	Lr	M	J
LSA 52.3 S5/S6	977.3	1917	1357	40.5
LSA 52.3 S7	999.9	1917	1450	44
LSA 52.3 L9	1069.1	2117	1642	49.4
LSA 52.3 L12	1116.4	2117	1827	56.5
LSA 52.3 UL16	1204.1	2267	2114	66.6

Torsional rigidity					
[Nm/rad]			(kg.m ²)		
k1	k2	k3	J1	J2	J3
1.79 E+7	3.79 E+7	1.60 E+7	7.8	31.1	1.5
1.79 E+7	3.68 E+7	1.68 E+7	7.8	34.7	1.5
1.79 E+7	3.54 E+7	1.51 E+7	7.8	40	1.6
1.79 E+7	3.36 E+7	1.67 E+7	7.8	47.2	1.5
1.79 E+7	3.13 E+7	1.32 E+7	7.8	57.5	1.3

NOTE : Dimensions are for information only and may be subject to modifications. Contractual 2D drawings can be downloaded from the Leroy-Somer site, 3D drawing files are available upon request.

The torsional analysis of the transmission is imperative. All values are available upon request.

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Moteurs Leroy-Somer SAS. Headquarters: Bd Marcellin Leroy, CS 10015, 16915 Angoulême Cedex 9, France. Share Capital: 32,239,235 €, RCS Angoulême 338 567 258.

DSE7310/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES



KEY FEATURES

- Configurable power-up mode
- MPU fail delay
- Enhanced graphical user interface
- Drag & drop advanced PLC editor
- MSC ID within PLC GenComm override
- 4-Line back-lit LCD text display
- Multiple Display Languages
- Five key menu navigation
- LCD alarm indication
- Heated display option available
- Customisable power-up text and images
- DSENet expansion compatibility
- Data logging facility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB, RS232 & RS485 communication
- Front panel configuration with PIN protection
- Power save mode
- 3 phase generator sensing and protection
- 3 phase mains (utility) sensing and protection (DSE7320 MKII only)
- Automatic load transfer control (DSE7320 MKII only)
- Generator current and power monitoring (kW, kvar, kVA, pf)
- Mains current and power monitoring (kW, kvar, kVA, pf) (DSE7320 MKII only)
- kW and kvar overload and reverse power alarms
- Over current protection
- Unbalanced load protection
- Independent earth fault protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN
- 6 configurable DC outputs
- 2 configurable volt-free relay outputs
- 6 configurable analogue/digital inputs
- Support for 0 V to 10 V & 4 mA to 20 mA sensors
- 8 configurable digital inputs
- Configurable 5 stage dummy load and load shedding outputs
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Manual and automatic fuel pump control
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel usage monitor and low fuel level alarms
- Simultaneous use of RS232 and RS485 communication ports
- True dual mutual standby using RS232 or RS485 for accurate engine hours balancing.
- MODBUS RTU support with configurable MODBUS pages.
- Advanced SMS messaging (additional external modem required)
- Start & stop capability via SMS messaging
- 3 configurable maintenance alarms
- Compatible with a wide range of CAN engines, including tier 4 engine support
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with supplied gasket) offers increased resistance to water ingress
- Modules can be integrated into building management systems (BMS) using MODBUS RTU

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE7320 MKII only) for convenience.
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements.

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous
5 V for upto 1 minute

CRANKING DROPOUTS

Able to survive 0 V for 100 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
510 mA at 12 V, 240 mA at 24 V

MAXIMUM STANDBY CURRENT
330 mA at 12 V, 160 mA at 24 V

CHARGE FAIL/EXCITATION RANGE
0 V to 35 V

GENERATOR & MAINS (UTILITY) VOLTAGE RANGE

15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

MAGNETIC PICKUP VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE
10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO H
Negative switching

ANALOGUE INPUTS A & F

Configurable as:
Negative switching digital input
0 V to 10 V sensor
4 mA to 20 mA sensor
Resistive sensor

ANALOGUE INPUTS B, C, D & E

Configurable as:
Negative switching digital input
Resistive sensor

OUTPUTS

OUTPUT A & B (FUEL & START)
15 A DC at supply voltage

OUTPUTS C & D
8 A AC at 250 V AC (Volt-free)

AUXILIARY OUTPUTS E, F, G, H, I & J
2 A DC at supply voltage

DIMENSIONS

OVERALL
245 mm x 184 mm x 51 mm
9.6" x 7.2" x 2.0"

PANEL CUT-OUT
220 mm x 160 mm
8.7" x 6.3"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40°C to +85°C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE
-30°C to +70°C
-22 °F to +158 °F

HEATED DISPLAY VARIANT
-40 °C to +70 °C
-40 °F to +158 °F

RELATED MATERIALS

TITLE

DSE7310 MKII & DSE7320 MKII Installation Instructions
DSE7310 MKII & DSE7320 MKII Operator Manual
DSE7310 MKII & DSE7320 MKII Configuration Suite PC Manual

PART NO.

053-181
057-253
057-243

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DSE7310/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

The DSE7310 MKII is an Auto Start Control Module and the DSE7320 MKII is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs, remote PC and via SMS text alerts (with external modem).

The DSE7320 MKII will also monitor the mains (utility) supply. The modules include USB, RS232 and RS485 ports as well as dedicated DSENet® terminals for system expansion.

Both modules are compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer an extensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry requirements.

The extensive list of features includes enhanced event and performance monitoring, remote communications & PLC functionality. Dual mutual standby is now available on both the DSE7310 MKII & DSE7320 MKII using RS232 or RS485 communications. This provides for a simpler and more convenient installation with more advanced features such as true engine hours balancing.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY

BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY

BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE

BS EN 60068-2-1
Ab/Ae Cold Test -30 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

VIBRATION

BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 gn

HUMIDITY

BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C
at 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C
at 93% RH 48 Hours

SHOCK

BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 ms

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES

BS EN 60529
IP65 - Front of module when installed into the control panel with the supplied sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS

