Diesel Generator

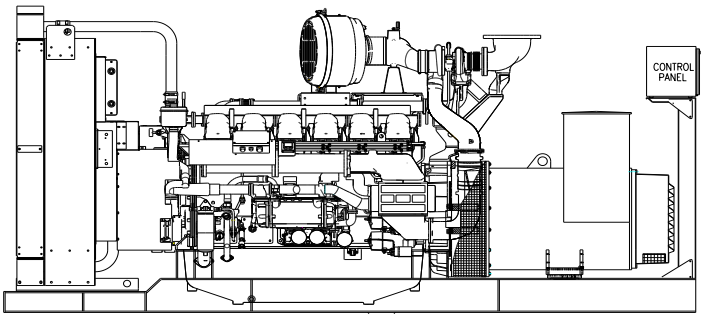
CJ1100CL

CUKUROVA GENERATOR SYSTEMS

1500 Rpm, 50Hz, 400V

Cummins KTA38-G5 diesel engine

Leroy Somer LSA 49.1 L11 alternator



Standard Generator Features

- AMF, Automatic mains failure unit
- Heavy duty type, 12 cylinder, water cooled engine
- 50°C radiator
- Starter motor
- Lead acid battery
- Charging alternator
- Battery charge redressor
- Heavy duty, brushless type alternator
- Base frame with anti-vibration units
- Industrial type silencers
- Flexible exhaust compensator
- Block water heater unit
- Control panel with digital-automatic main control module
- Fan, fan drive, charging alternator drive and all rotating parts covered
- Radiator matrix covered by metal mesh against the mechanical damages
- Fabricated and welded steel base frame
- Anti-vibration mountings
- Engine and alternator manufacturer test reports
- Factory load, performance and function tests

Optional Features

- Automatic load transfer panel
- Automatic syncronization and power sharing systems
- Soundproof canopy
- Container type enclosers
- Road trailer
- Job-site trailer
- Protection circuit breaker
- Air start
- Remote type radiator
- Base fuel tank
- External type fuel tank
- Automatic fuel transfer system
- Residential silencer

TÜV CERT

ISO 9001:2000

Cukurova is a fully accrediated ISO 9001:2000 company

CE

This generator is available with CE certification

PCT

Cukurova is accrediated with Gost certification

Model	Standby		Prime	
	kVA	kW	kVA	kW
CJ1100CL	**1100**	**880**	**1000**	**800**

APPLICATION DATA

Cummins KTA38-G5 Engine

Standard Features

Aftercooler –

Large capacity integral aftercoolers are supplied with cooling water separate from the engine jacket. This provides cooler, denser intake air for more complete combustion and reduced engine stresses for longer life and low exhaust emissions.

Lubrication –

Large capacity integral gear driven pump provides pressure lubrication to all bearings and provides supply for piston cooling. Cummins supplied large capacity oil pans are recommended for Prime and Continuous Power applications.

Cooling System –

A two pump, two loop system must be employed; i.e. The engine jacket is cooled by one radiator or heat exchanger and the aftercoolers are cooled by a separate radiator or heat exchanger. Both cooling systems are independent of each other. The jacket water pump is supplied engine mounted from the rear of the gear cover. The aftercooler water pump is customer selectable and can be provided mounted on the front of the gear cover. Cummins provides conventional water inlet and outlet connections for the jacket system. Aftercooler water pump inlet and aftercooler core outlet connections are provided for customer use and ease of plumbing on the aftercooler system.

Model	Standby kW		Prime kW	
	Gross	Net	Gross	Net
KTA38-G5	**970**	**932**	**880**	**842**

Lubricating System

Type	Pressurized
Lub.oil capacity sump min., Liters	129
Lub oil temp. Max to bearings, °C	105

- Wet sump with filler and dipstick
- Engine jacket water/lub oil temperature stabiliser
- Full-flow spin-on oil filters

Fuel System

Type of injection system	Direct injection
Fuel injection pump	Combined unit injector
Fuel injector opening pressure, mmHg	165
Delivery/hour at 1500rev/min, Liters	428
Fuel lift pump	
Governor type	Electronic

- Unit fuel injectors with lift pump and hand stop control
- Full flow spin-on fuel filters

Technical Specifications

Manufacturer	Cummins
Model	KTA38-G5
Type	4 cycle, water-cooled, diesel engine
Number of cylinders	12
Cylinder arrangement	V - Type
Displacement, Liters	38
Bore X Stroke, mm	159 X 159
Compression Ratio	14:01
Combustion System	Direct injection
Aspiration	Turbocharged, charge cooled
Rotation	Anti-clockwise viewed on flywheel
Gross engine power, kWb	970
Fan Power, kWm	38
Combustion air flow, m³ / min	60
Exhaust gas temp.(after turbo), °C	513
Exhaust gas flow (after turbo),m³ / min	198

Electrical System

Alternator	24 Volt-35A
Starter motor (DC)	24 Volt

- Combined high coolant temperature / low oil pressure switch
- Overspeed switch and magnetic pick up

Fuel Consumption

liters per hour	%110 Load	228 L
	%100 Load	209 L
	%75 Load	161 L
	%50 Load	113 L

Cooling System

Type	heavy duty type
Ambient temperature, °C	50
Engine coolant capacity, Liters	118
With Aftercooler coolant cap., Liters	199
Jacket coolant flow, Liters / sec	6,8
Cooling min airflow, m³ / min	1488 (at 50°C)

- Gear driven circulating pump
- Twin thermostats
- Crankshaft pulley for fan drive

Optional Equipments

- Instrument panel
- Twin heavy duty air cleaner - paper element with pre-cleaner
- Changeover lubricating oil filter
- Changeover fuel oil filter
- Immersion heater with thermostat
- Air starters

Leroy Somer LSA 49.1 L11 C 6S/4 Alternator

Standard Features

Top of the Range Electrical Performance
Class H insulation
Standard 6-wire re-connectable winding, 2/3 pitch
High efficiency and motor starting capacity
R 791 interference suppression conforming to standard EN 55011 group 1

Protection System Suited to the Environment
The LSA 49.1 is IP23

Reinforced Mechanical Structure Using Finite Element Modelling
Standard direction of rotation: clockwise when looking at the drive end view
Compact and rigid assembly to better withstand generator-set vibrations
Steel frame
Cast iron flanges and shields
Twin bearing and single bearing versions designed to be suitable for engines on the market
Half-key balancing
Greased for life beraing

Accessible Terminal Box Proportioned for Optional Equipment
Easy access to the voltage regulator and to the connections
Possible clusion of accessories for paralelling, protection and measurement
Connection bar for reconnecting voltage

Compliant with International Standards
The LSA 49.1 alternator conforms to the main international standards and regulations:
IEC 60034, NEMA MG 1.22, ISO 8528, CSA, CSA/UL
It can be integrated into a **CE** marked generator set
The LSA 49.1 is designed, manufactured and marketed in an ISO 9001 environment

Model	Standby		Prime	
	kVA	kW	kVA	kW
LSA 49.1 L11 C 6S/4	**1100**	**880**	**1000**	**800**

Technical Specifications

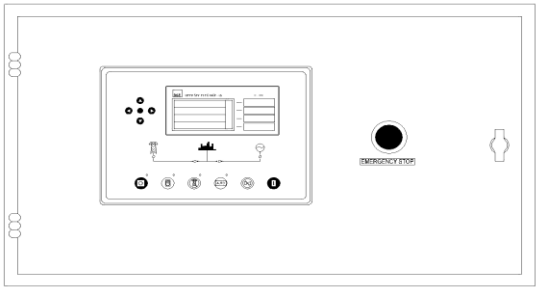
Manufacturer	LEROY SOMER
Model	LSA 49.1 L11 C 6S/4
Type	4-Poles, Rotating Field, Brushless
Standby power at rated voltage, kVA	1100
Efficiency, %	94.3
Power factor	0.8
Phase	3
Frequency, Hz	50
Speed, Rpm	1500
Voltage, V	400
Excitation	AREP+PMI or PMG
Stator windings	2/3 Pitch factor
Regulation	AVR, Automatic Voltage Regulator
Voltage Regulator	R 449
Voltage Regulation, %	± 0.5
Total HarmonicTGH / THC	< 4%
Waveform: NEMA = TIF	< 50
Waveform: I.E.C = THF,	< 2%
Insultion class	H
Overspeed, Rpm	2250
Sustained short-circuit current	300%(3IN) : 10s
Construction	Single bearing, direct coupled
Coupling	Flexible
Amortisseur Windings	Full
Connection	WYE
Rotor	Dynamic balanced
Protection class	IP23
Air flow, m³ / min	1.6

Optional Equipment

- Filters on air inlet and air outlet (IP44)
- Windign protection for clean environmetns with relative humidity greater than 95%
- Space heaters
- Thermal protection for winding
- Digital voltage regulator

Control Panel

Standard Equipments



- Deeapse 7320 digital automatic control module
- Emergency stop button

Input Functions display on LCD

Generator Volts	Volts L1-N, L2-N, L3-N
Generator Volts	Volts L1-L2, L2-L3, L3-L1
Generator Amps	Amps L1, L2, L3
Generator Frequency	Hz
Mains Volts	Volts L1-N, L2-N, L3-N
Mains Volts	Volts L1-L2, L2-L3, L3-L1
Mains Frequency	Hz
Engine Speed	RPM
Plant Battery Volts	Volts
Engine Hours Run	Hour
Generator Total Power	kVA L1, L2, L3,total
Generator Total Power	kW L1, L2, L3,total
Generator Power Factor	Cosφ L1, L2, L3,total

Optional Input Functions

Fuel Level	%
Oil Temperature	°C

Alarm Channels

Under/Over Generator Voltage
Over-Current
Under/Over Generator Frequency
Under/Over Speed
Charge Fail
Emergency Stop
Low Oil Pressure
High Engine Temperature
Fail to Start
Low/High DC Battery Voltage
Reverse Power
Generator Phase Rotation Error
Reverse Power
Loss of Speed Sensing Signal
Mains Out of Limits

Deepsea 7320 Control Module

Description

- The model 7320 is an Automatic Mains Failure Control module.
- The modul is used to monitor a mains supply and automaticlly start a standby generator set.
- The module also provides indication of operational status and fault conditions automaticly shutting down the genset and indicating failures by means of an LCD display, and appropriate flashing LED on the front panel.
- Selected timers and alarms can be altered by the user from the front panel.
- Alterations to the system are made using USB and a PC. This interface also provides real time diagnostic facilities

Specifications

- 240mm x 181mm dimensions
- 70mm x 40mm dimensions, 4 segment grafical LCD monitor
- Developed 16-bit Microprocessor design
- Easy comprehended display (Hid-Til-Lit SMD LED technology)
- LED mimic diagram
- SMS messaging capability with suitable GSM Modem
- PC software is MS Windows based and allows the operator to control the module from a remote location (with USB)
- Easy pushbutton controls
- System parameters can be adjusted manually from the front panel
- kVA,kW ve Cosφ measurements
- Communication with MODEM / Ethernet
- Modbus RTU
- User selectable RS232 or RS485 communications.
- 4 analog inputs, 8 digital inputs, 6 digital outputs

Pushbutton Controls

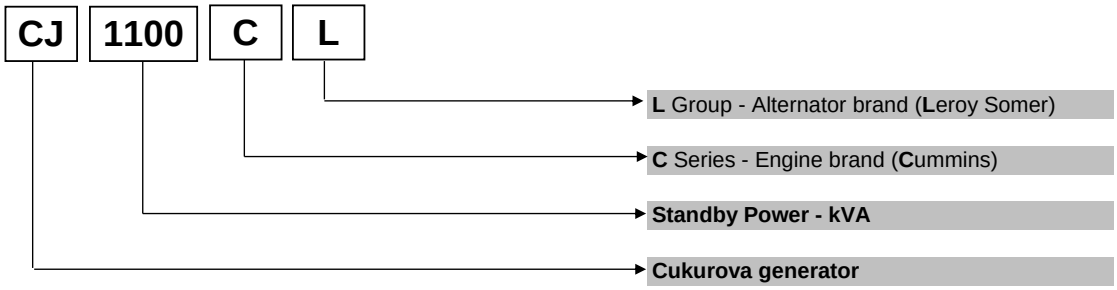
STOP / START
AUTO, TEST, MANUAL
LCD PAGE

Environmental Testing Standards

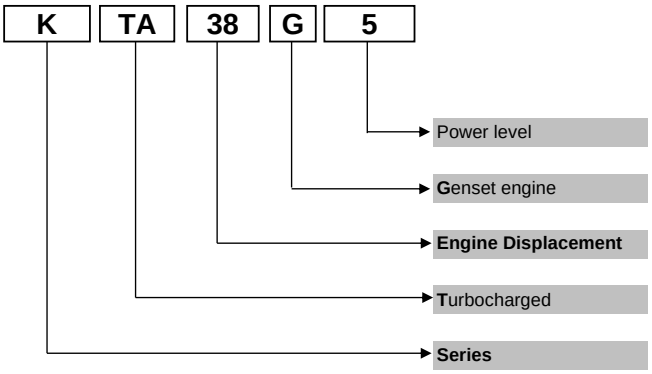
Electromagnetic Compatibility
BS EN 50081-2:1992 and EN 61000-6-4:2000 EMC, Emission Standards for the Industrial Environment
EN 61000-6-2:1999 EMC, Immunity Standards for the Industrial Environment
Vibration
BS EN 60068-2-6 Ten sweeps (up and back down) at 1 octave/minute in each of the three major axes.
5Hz to @ +/-7.5mm constant displacement.
8Hz to 500Hz 2gn constant acceleration.
Temperature
Cold : BS EN 60068-2-1 to -30°C
Hot : BS EN 60068-2-2 to 70°C
Humidity
BS EN 2011 part 2.1 93% RH @ 40° for 48 hours
Shock
BS EN 6068-2-27 Three half sine shocks in each of the three major axes 15gn amplitude.11mS duration.
Electrical Safety
BS EN 60950 Low Voltage Dirctive/Safety of information technology equipments, including electrical business equipment

Model Codes and General Information

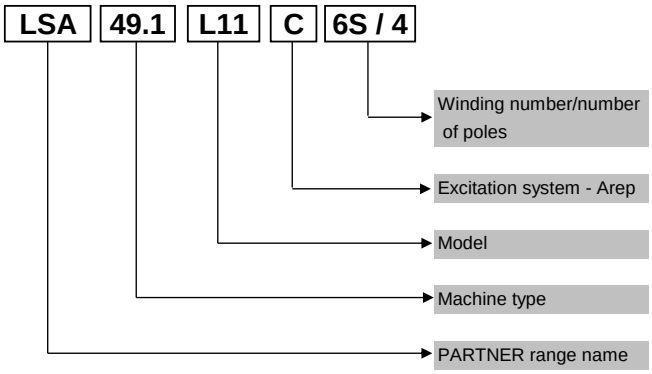
Cukurova Diesel Generator



Cummins KTA38-G5 Series Engine



Leroy Somer Alternator



Power Ratings

Standby power rating is for the supply of emergency power at variable load for the duration of the non-avalaibality of the mains power supply.No overload capacity is available at this rating.A standby rated engine should be sized for an avarage load factor of 80% based on published standby rating for 500 operating hours per year.Standby ratings should never be applied except in true emergency power failure conditions.

Prime power rating is available for unlimited hours per year with a variable load of which the average engine load factor is 80% of the published power rating, incorporation of a 10% overload for 1 hour in every 12 hours of operation which permitted

Continuous power rating is available for continuous full load operation.No overload is permitted.

Acc. to ISO 3046/1, BS 5514, DIN6271

Electric Formulas

Values	Formula	
kWe	kWm X E	
kWe	(U x I x 1.73 x pf) / 1000	kVA x pf
kVA	(U x I x 1.73) / 1000	kWe / pf
I (Amp)	(kWe x 1000) / (U x 1.73 x pf)	(kVA x 1000) / (U x 1.73)
Frequency	(Rpm x N°Pole) / (2 x 60)	
Rpm	(2 x 60 x Frequency) / N°Pole	

kWm: Mechanical Power
kWe : Electrical Power
pf : Power factor
E : Alternator efficiency
I : Current (A)
U : Voltage (V)
kVA : Power
Rpm: Revolutions per minute

CUKUROVA PowerGeneration

CUKUROVA JENERATOR SANAYII TICARET A.S.

Izmir Factory
Aegean Free Zone, Boss Sokak
No:11, Gaziemir - Izmir, Turkey
Tel : +90 232 252 2026
Fax : +90 232 252 2027

Istanbul Export Sales Office
Ankara Yolu, Tuzla Tersane Kavşağı
No:26 34947 Tuzla-Istanbul, Turkey
Tel : +90 216 395 3460
Fax : +90 216 395 5453
Mail : info@cukurovapower.com