DG425 – DG470S / 60Hz (Natural Gas)

GENERATORS GHADDAR

Gensets
Small Range

DOOSAN

LEROY SOMER

Generating Set Ratings

Voltage*1	Frequency	Alternator	Standby Rating*2	Prime Rating*3	COP Rating*4
277/480 V	60 Hz	TAL44H	425 kVA	470 kVA	380 kVA
127/220 V	60 Hz	TAL473A	425 kVA	471 kVA	380 kVA
220/380 V	60 Hz	TAL473A	425 kVA	471 kVA	380 kVA

The above ratings represent the generating set capability guaranteed within ±3% at the reference conditions equivalent to those specified in ISO 8528/1 standard.

Pictures for Gensets could vary from actual product.

Notes

1. The applicable voltage range is 380V to 415V for 50Hz applications and 380V to 480V for 60Hz applications.

*2. **Stand-by rating:** is the standby power rating of the generating set, where a variable load limited to an annual usage up to 500 hours is applied, with 300 hours of which may be continuous running. Noting that no overload is permitted.*

*3. **Prime rating:** is the prime power rating of the generating set, where a variable load and unlimited hours usage are applied on the generating set with an average load factor of 80% of the rating over each 24-hour period. Noting that a 10% overload is available for 1 hour in every 12 hours operation.*

*4. **COP rating**: is the maximum power available for continuous loads for unlimited running hours a year between the maintenance times recommended by the manufacturer under the environmental conditions established by the same.*

Certifications

- The complete Generating Set is type-tested according to ISO 8528-8 Standard.

- The control panel is certified by an ISO 17025 accredited laboratory to have IP55 according to IEC 60355

ISO 17025 ACCREDITED LABORATORY

Certified System Quality ISO 9001 SAI GLOBAL

Engine Technical Data

Make & Model	**DOOSAN GV222TI**		
Cylinders	V12, with replaceable wet liner		
Bore & Stroke (mm)	128 x 142		
Induction system	Turbo charged & intercooled		
Combustion	stoichiometric, Premixed and Spark ignited		
Cycle	4 stroke		
Compression ratio	10.5:1		
Cooling System	Water cooled		
Displacement (Liters)	21.9		
Lube oil capacity (Liters)	40		
Coolant capacity (Liters)	163		
Engine Speed (rpm)	1800		
Gas Consumption Nm^3 /Hr @ 100% Load	107.2	@ 50% Load	62.0
Gas Consumption Nm^3 /Hr @ 75% Load	89.4	@ 25% Load	37.5
Minimum gas inlet pressure (mbar)	100		
Max allowed inlet pressure (mbar)	500		
Radiator cooling air flow (m^3/min)	720		
Max exhaust gas flow (m^3/min)	57.4		
Exhaust temperature °C (max)	515		

The above performance data are valid as per the following specs:
- Natural Gas is methane based.
- Lubricating oil specification should exceed API CE, SAE 15W-40.
- The coolant should be 50% inhibited glycol and 50% fresh water.

Dimensions

Length	3300 mm
Width	1620 mm
Height	2130 mm
Weight	3570 Kg

Alternator Technical Data

Make & Model	**Leroy Somer TAL46H [Leroy Somer TAL473A]**				
Frequency / No. of poles	60Hz / 4P	[60Hz / 4P]	Winding pitch	2/3	[2/3]
Ingress protection	IP23	[IP23]	AVR model	R120	[R120]
Insulation class	H	[H]	Overspeed	2250 R.P.M.	[2250 R.P.M.]
Terminals (Optional)	6 (12)	[6 (12)]	Voltage regulation	± 1 %	[± 1 %]
Excitation system	SHUNT	[SHUNT]	Coolant air flow	0.58 m^3/s	[1.1m^3/s]

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Control Panel Specifications

GMP260MKIII (DSE6110 MKIII) panel is an automatic start generating set panel of microprocessor-based design which is capable of interfacing with electronic engine through the can-bus J1939. It is fully configurable by PC software, yet most settings can be programmed by front fascia buttons. If Mains voltage is to be monitored, DSE6120MKIII can be offered.

Circuit Breaker Schneider or ABB, 3 Pole MCB (4 Pole available as Optional)

Construction

Sheet Fabrication	CNC shearing & bending
Paint type	Heat-treated powder-coated
Paint application	Electrostatic corona spraying
Durability tests	• IMPACT [EN ISO 6272] • Salt spray resistance [ASTM B117-73] • Humidity Resistance [ASTM D2247]
Compliance	• Panel is compliant with [ISO8528-8] • Clearance & Creepage [IEC60355-1] • Leakage current & Dielectric strength [IEC60355-1] • Protection against electric shock [IEC600 364-4-41]
Degree of protection	IP55
Wire crimping	• Crimping force up to 20KN • Accuracy of 0.01mm • Each crimping is checked by Komax CFA+
Wire coding	• Wires are coded by wire color and cross-section • Wires are coded by printed numbers • Wires are coded by printed function of the wire

Protection (standard)	(OPTIONAL Note 1,3)	Control (standard)	(OPTIONAL Note 1)	Instrumentation (standard)	(OPTIONAL Note 1,3)
Over /Under AC voltage	High oil temperature	Remote start input	Battery Changer: 5A, 10A , UL	Gen AC Voltage: 3ph VLL & VLN	Lube oil temperature
Over /Under frequency	High exhaust temperature	Emergency Stop button		Gen Frequency: Hz	Exhaust temperature
Delayed Over current	Low gas pressure	Common Alarm volt-free contact	Extension:	Gen Current: 3 phase A	Engine Inlet air (Boost) pressure
Short-circuit	Low coolant pressure	Event log (100 events)	*Ethernet –Modbus TCP*	Power: KW, KVA, KVAR & PF	Charging ammeter
Over KW		Weekly Exerciser	*RS485- Modbus RTU*	Energy: KWhr, KVAhr, KVARhr	Gas pressure
High Engine Temperature	Low oil level	Audible Alarm	*GPS tracker*	Lube Oil pressure	Coolant pressure
Low oil pressure	High winding temperature	Standard CANbus J1939		Engine coolant temperature	
Maintenance Alarm	High bearing temperature	Pre/Post heat control	Webnet Applications	Battery DC Voltage	Lube oil level
High/Low Battery voltage	Low boost pressure	Data Logging	SNMP Gateway	DC Alternator Voltage	Winding temperature 3xRTD
Low coolant level Note 2	Fusible link fire protection	PLC Editor	Inputs: 20mA, 10V	Engine Speed	Bearing temperature RTD
3 ph Mains Sensing (6120)	Low coolant temperature	Oil Level Control	Thermocouples	Operating hours	Tier 4 Support

Note 1: some OPTIONAL features could be standard if CANbus is established within electronic engines.
Note 2: Low coolant level protection is standard feature for Gensets above 200KVA, otherwise it is optional.
Note 3: There is limitation in the number of protections and measurements that can be offered with GMP260MK.

Other types of control Panels & Modules can be offered according to required specifications (DSE 7310/20, 7410/20, 8610, 8810 and Others).

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Genset Standard Features

Assembly:
Gensets are assembled at Ghaddar Machinery Factory in compliance with ISO 8528-8 standard.

Fabrication:
- The engine/alternator assembly rests on skid with Anti-vibration mounting pads.
- The skid is made up of durable sheet metals and beams exceeding "Vibration & Torsion" Resistance Norms.
- The control panel enclosure is made up of metal sheet .

Paint:
-The skid and control panel enclosure are painted with heat-treated and power-coated electrostati corona spraying.
- Paints passed durability tests conforming to international quality standards.
- Impact (EN ISO 6272)
- Salt Spray Resistance (ASTM B117-73)
- Humidity Resistance (ASTM D2247)

Works-Testing:
- All Gensets are tested prior to dispatch.
- Test is automatically generated and checked according to ISO8528
- Test certificate is issued for each Genset

Equipment:
- Water cooled Radiator with belt driven blower fan and full guarding
- Electric starter with solenoid Relay
- Battery Charging Alternator
- Energized to run solenoid
- Replaceable Gas, oil and air filters
- Heavy duty leads acid battery with matching capacity (Amps & CCA)
- Gas train.

Documentation:
- User Manual for Operation, Installation and Maintenance guidance
- Wring Diagram.
- Test Report
- Maintenance Schedule
- Catalogues for Engine, Alternator & AVR

Genset Optional Features

- Manual & Automatic Transfer Switches,
- Synchronizing & Totalizing Panels
- Water jacket heater
- Oil heater
- Battery heater
- Anti-condensation Heater
- Air Shut-off Valve
- Oil Sampler
- Pre-lube Oil Pump
- Gas detectors
- One loose supplied industrial exhaust silencer – 16 DB. noise reduction level.

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