CT350 – CT400S (QSG12)-50 Hz

GENERATORS GHADDAR

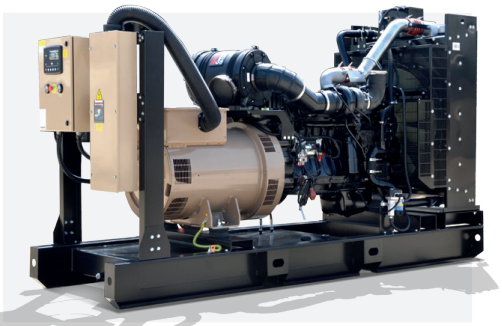
Gensets
Medium Range

Cummins

LEROY SOMER

Ratings @ 0.8 PF		Prime Rating	Stand-by Rating
Voltage*1	Frequency*2	CT350*3	CT400S*4
230/400 V	50 Hz	350 kVA 280 kW	400 kVA 320 kW

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 and canopies could vary from actual product.

Notes

1. *The applicable voltage range is 380V to 415V for 50Hz applications. For other voltages, please consult factory.*

2. *This generating set is of fixed speed of 1500 rpm.*

3. ***CT350** is the **prime power** rating of the generating set is where a variable load and unlimited hour usage are applied with an average load factor of 80% of the prime rating over each 24-hour period. Noting that a 10% overload is permitted for 1 hour in every 12-hour operation.*

4. ***CT400S** is the **standby power** rating of the generating set is 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.*

Certifications

PROUDLY CERTIFIED BY

Certified System
Quality ISO 9001
SAI GLOBAL
ISO 17025 ACCREDITED LABORATORY
ISO 8528 TYPE-TEST CERTIFICATION
ISO 14001
ISO 45001

- 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

Engine Technical Data

Make & Model	CUMMINS QSG12-G3		
Cylinders & Arrangement	6; Vertical in-line		
Bore & Stroke (mm)	132 x 144		
Induction system	Turbo charged & Aftercooled		
Combustion	Direct injection		
Cycle	4 stroke		
Compression ratio	17.0:1		
Cooling System	Water cooled		
Displacement	11.8 liters		
Lube oil capacity	34 liters Max		
Coolant capacity	48 liters		
Standard governor	Electronic; Cummins CM2880		
Engine Speed	1500 rpm		
Fuel Consumption (L/H) @ 100% Load	72	@ 50% Load	37
Fuel Consumption (L/H) @ 75% Load	54	@ 25% Load	20
Radiator Cooling Air Flow (m^3/s)	8.4		
Emissions regulations	Fuel optimized		
Exhaust temperature °C (max)	457		
Max exhaust gas flow (m^3/min)	49.4		
Max. allowed back pressure (kPa)	10.2		

The above performance data are valid as per the following specs:
- Diesel Fuel is according to BS2869 Class A2 or equivalent.
- Lubricating oil is according to Grade SAE 15W-40 API CI4.
- The coolant should be 50% antifreeze and 50% fresh water. Anti-freeze should be compliant with ASTM D6210.

Dimensions

Length	3200 mm
Width	1100 mm
Height	2000 mm
Weight	2700 Kg

Alternator Technical Data

Make & Model	Leroy Somer TAL046H		
Frequency / No. of poles	50Hz / 4P	Winding pitch	2/3
Ingress protection	IP23	AVR model	R150
Insulation class	H	Overspeed	2250 R.P.M.
Terminals (Optional)	6 (12)	Voltage regulation	± 0.8 %
Excitation system (Optional)	SHUNT (AREP +or PMG)	Coolant air flow	0.48 m^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 (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	Fuel pump control	Gen Frequency: Hz	Exhaust temperature
Delayed Over current	Low fuel 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	Low fuel level	Weekly Exerciser	RS485- Modbus RTU	Energy: KWhr, KVAhr, KVARhr	Fuel 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	Water in Fuel Detection	Engine coolant temperature	Fuel level
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 GMP260MKIII.

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

The control panel is certified by an ISO17025 accredited laboratory to have IP55 according to IEC60355

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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.
- A skid mounted fuel tank is supplied with fuel gauge, filler cap, fuel inlet and outlet hoses.
- 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 fuel, oil and air filters
- Heavy duty leads acid battery with matching capacity (Amps & CCA)
- One loose supplied industrial exhaust silencer – 16 DB noise reduction level.
- Integral Fuel Tank with 231 L capacity.

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
- Fuel water separator
- Water jacket heater
- Oil heater
- Fuel heater
- Battery heater
- Anti-condensation Heater
- Air Shut-off Valve
- Oil Sampler
- Pre-lube Oil Pump

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