# CT45 – CT50S (60 Hz)

GENERATORS GHADDAR

**Gensets**
Small Range

Cummins

LEROY SOMER

| Ratings @ 0.8 PF | | Prime Rating | Stand-by Rating |
|---|---|---|---|
| Voltage*[1] | Frequency*[2] | CT45*[3] | CT50S*[4] |
| 127/220 V | 60 Hz | 45 kVA | 50 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 and canopies could vary from actual product.*

## Notes

*1. The applicable voltage range is 220V, 380V to 480V for 60Hz applications. For other voltages, please consult factory.*

*2.This generating set is of fixed speed of 1800 rpm.*

*3.CT45 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.CT50S 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

*- 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

Quality ISO 9001 SAI GLOBAL

## Engine Technical Data

| Make & Model | CUMMINS S3.8-G8 | | |
|---|---|---|---|
| Cylinders & Arrangement | 4; Vertical in-line | | |
| Bore & Stroke (mm) | 97 x 128 | | |
| Induction system | Turbo charged | | |
| Combustion | Direct injection | | |
| Cycle | 4 stroke | | |
| Compression ratio | 3.81:1 | | |
| Cooling System | Water cooled | | |
| Displacement | 3.8 liters | | |
| Lube oil capacity | 10 liters Max | | |
| Coolant capacity | 12.5 liters | | |
| Standard governor (Optional) | Mechanical +/-5%(Electronic) | | |
| Engine Speed | 1800 rpm | | |
| Fuel Consumption (L/H) @ 100% Load | 11 | @ 50% Load | 6.0 |
| Fuel Consumption (L/H) @ 75% Load | 8.5 | @ 25% Load | 4.0 |
| Radiator Cooling Air Flow ($m^3/s$) | 2.07 | | |
| Emissions regulations | For non-regulated territories | | |
| Exhaust temperature °C (max) | 470 | | |
| Max exhaust gas flow ($m^3/min$) | 4.7 | | |
| Max. allowed back pressure (kPa) | 6.7 | | |

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.

## Dimensions

| | |
|---|---|
| **Length** | 2350 mm |
| **Width** | 1100 mm |
| **Height** | 1500 mm |
| **Weight** | 1000 Kg |

## Alternator Technical Data

| Make & Model | Leroy Somer TAL042E | | |
|---|---|---|---|
| Frequency / No. of poles | 60Hz / 4P | Winding pitch | 2/3 |
| Ingress protection | IP23 | AVR model | R120 |
| Insulation class | H | Overspeed | 2250 R.P.M. |
| Terminals (Optional) | 6 (12) | Voltage regulation | ± 1 % |
| Excitation system | SHUNT | Coolant air flow | 0.13 $m^3/s$ |

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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 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]<br>• Salt spray resistance [ASTM B117-73]<br>• Humidity Resistance [ASTM D2247] |
| Compliance | • Panel is compliant with [ISO8528-8]<br>• Clearance & Creepage [IEC60355-1]<br>• Leakage current & Dielectric strength [IEC60355-1]<br>• Protection against electric shock [IEC600 364-4-41] |
| Degree of protection | IP55 |
| Wire crimping | • Crimping force up to 20KN<br>• Accuracy of 0.01mm<br>• Each crimping is checked by Komax CFA+ |
| Wire coding | • Wires are coded by wire color and cross-section<br>• Wires are coded by printed numbers<br>• 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).

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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 117 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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