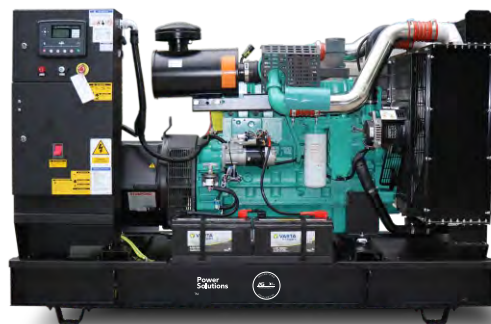


■ **Model: C440D6**

Powered by CUMMINS



■ **Generator Specification**

Service	PRP <sup>(1)</sup>	ESP <sup>(2)</sup>
Power (kVA)	400	438
Power (kW)	320	350
Rated speed ( r.p.m)	1800	
Standard voltage (V)	220/127V, 440/254V	
Rated at power factor(cos phi)	0.8	

Performance Data		
Model	C440D6	
Engine brand	Cummins	
Engine model	QSZ13.G5	
Speed control type	Electronic	
Phase	3	
Control system	Digital	
Starter motor voltage	24V	
Frequency	60HZ	
Engine speed (RPM)	1800	
Fuel Consumption (L/H)	100% standby power	116.9
	100% prime power	102.1
	75% prime power	76.6
	50% prime power	51.8



UDUSTRIA ENERGY Power gensets are compliant with ISO 9001 and CE standard, which include the following directives:

- 2006/42/EC Machinery safety.
- 2006/95/EC Low voltage
- EN 60204-1: 2006+A1: 2009, EN ISO 12100: 2010, EN ISO 13849-1: 2008, EN 12601 : 2010

**(1) PRP (Prime Power):**

According to ISO8528-1, prime power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals. The permissible average power output during at 24 hours period shall not exceed 80% of the prime power. 10% overload available for governing purposes only.

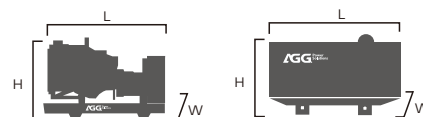
**(2) ESP (Standby Power):**

According to ISO 8528-1, It is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hours of operation per year (of which no more than 300 hours for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

Powers Voltage (V)	ESP		PRP		Standby Amps
	KVA	KW	KVA	KW	
480/277	438	350	400	320	526.8
440/254	438	350	400	320	574.7
380/220	438	350	400	320	665.5
220/127	438	350	400	320	1149.5
208/120	438	350	400	320	1215.8

**Standard reference Conditions**

Note: Standard reference condition 25°C (77°F) air inlet temp, 100m(328ft) A.S.L 30% relative humidity. Fuel consumption dat with diesel fuel with specific gravity of 0.85 and conforming to BS 2869: 1998 , Class A2



**Dimension and Weight**

Dimension	Open	Silent
Length (L)	3100mm	4365mm
Width (W)	1205mm	1450mm
Height (H)	1780mm	2255mm
Net Weight	3109KG	4074KG
Fuel Tank (L)	560	620

## ■ Engine Specification: QSZ13.G5

Basic technical data	
No. of cylinders	6
Cylinder arrangement	In-line
Cycle	4 stroke
Induction system	Turbocharger
Compression ratio	14.0:1
Bore	140mm
Stroke	152mm
Displacement	14L
Engine idle speed	575-675 RPM
Approximate engine weight	TBD

Cooling system	
Coolant capacity-engine	20.8L
Maximum coolant friction head external to engine:	
-1800 rpm	48kPa
-1500 rpm	41kPa
Maximum static head of coolant above engine crank centerline	18.3m
Standard Thermostat (Modulating) Range	82 - 93°C
Minimum Pressure Cap	69 kPa
Maximum Top Tank Temperature for Standby / Prime Power	104 / 100°C

Fuel system	
Injection system	Cummins PT
Governor type	Electronic
Maximum restriction at lift pump	TBD
Maximum fuel inlet temperature	TBD
Total drain flow (constant for all loads)	TBD

Air intake system	
Maximum intake air restriction with heavy duty air cleaner:	
-Dirty element	6 kpa
-Clean element	4 kpa

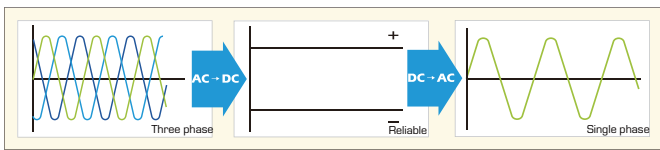
Lubrication system	
Engine oil pressure for engine protection devices:	
— Idle speed(Minimum )	103kPa
— Governed speed(Maximum )	241-310kPa
Maximum oil temperature	121 °C
Minimum required lube system capacity-sump plus filters	38.6L

Electrical system	
Cranking motor (Heavy duty, positive engagement)	24V
Battery charging system, negative ground	35 ampere
Maximum allowable resistance of cranking circuit	0.002 ohm
Minimum recommended battery capacity- cold soak	900 CCA

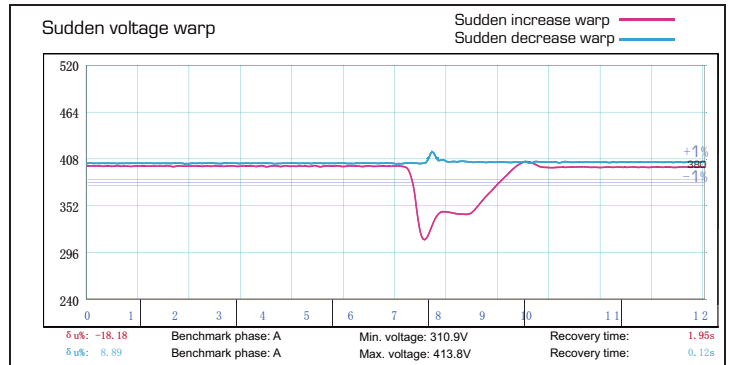
General installation	Prime power
Gross engine power output	313kw
Piston speed	9.1 m/s
Friction horsepower	35 kW
Engine water flow to engine	8.2 l/min
Intake air flow	477 l/sec
Exhaust gas flow	1315 l/sec
Exhaust gas temperature	521 °C
Radiated heat to ambient	52kW
Heat rejection to coolant	211 kW
Heat rejection to fuel	TBD

## ■ Alternator Specification

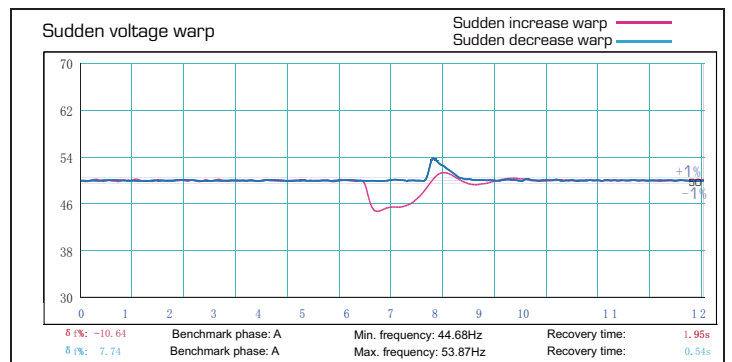
Alternator	
Number of phase	3
Power factor (Cos Phi)	0.8
Poles	4
Winding Connections (standard)	Star-serie
Terminals	12
Insulation type	H class
Winding Pitch	2/3
IP rating	IP23
Excitation system	Self-excited
Bearing	Single bearing
Coating	Vacuum impregnation
Voltage regulator	A.V.R
Couping	Flexible disc



Emergency voltage curve



Emergency frequency curve



## ■ Options

Engine	Alternator	Generator Sets	Fuel System
<ul style="list-style-type: none"> <li>Water Jacket Pre-heater</li> <li>Fuel heater</li> </ul>	<ul style="list-style-type: none"> <li>Winding Temp measuring Instrument</li> <li>Alternator Pre-heater</li> <li>PMG</li> <li>Anti-damp and anti-corrosion treatment</li> <li>Anti-condensation heater</li> <li>Winding and bearing RTD</li> </ul>	<ul style="list-style-type: none"> <li>Tools with the machine</li> <li>Extended range fuel tank</li> <li>Bunded fuel tank</li> </ul>	<ul style="list-style-type: none"> <li>Low fuel level alarm</li> <li>Automatic fuel feeding system</li> <li>Fuel T-valves</li> </ul>
Canopy	Lub oil system	Cooling System	Control Panel
<ul style="list-style-type: none"> <li>Rental type Canopy</li> <li>Trailer</li> </ul>	<ul style="list-style-type: none"> <li>Oil Pre-heater</li> <li>Oil temp sensor</li> </ul>	<ul style="list-style-type: none"> <li>Front heat protection</li> </ul>	<ul style="list-style-type: none"> <li>Remote control panel</li> <li>ATS</li> <li>Synchronizing controller</li> <li>Adjustable earth leakage relay</li> </ul>

## ■ Control Panel

### Configuration

- Emergency stop button
- Protection MCB
- Battery charger
- Integrated aviation plug
- ATS connection
- Digital control module

### Features

- 3 phase generator set monitoring
- Support of engines equipped with electronic control unit
- Comprehensive diagnostic message
- Automatic or manual start/stop of the gensets
- Push buttons for simple control, lamp test
- Graphic back-lit LCD display
- Parameters adjustable via keyboard or PC
- Mains measurements ( 50HZ/60HZ)
- Generator measurements ( 50HZ/60HZ)
- Comprehensive shutdown or warning on fault condition
- 3 phase Generator protections
  - Over-/under voltage
  - Over-/under frequency
  - Current/voltage asymmetry
  - Over current/overload
- 3 phase AMF function
  - Over-/under frequency
  - Over-/under voltage
  - Voltage asymmetry
- Configurable analog inputs
- Battery voltage, engine speed (pick-up) measurement
- Configurable programmable binary inputs and outputs
- Warm-up and cooling functions
- Generator C.B. and Mains C.B. control with feedback and return timer
- RS232 interface
- Modem communication support
- Hours counter
- Sealed to Ip65
- Event log

### Benefits

- Less wiring and components
- Integrated solution
- Less engineering and programming
- User friendly set-up and button layout
- Module can be configured to suit individual applications
- PC software for simplified configuration
- Wide range of communication capabilities

### Operation conditions

- Operation temp: -20 °C to + 70 °C
- Storage temp: -30 °C to + 80 °C
- Operating humidity: 95% w/o condensation
- Vibration : 5-25Hz,  $\pm 1.6$  mm  
5-100Hz, a=4g
- Shocks: a= 500m/s<sup>2</sup>

### Options

- Ethernet interface (Remote monitoring and control)
- GSM modem/wireless internet (Remote monitoring and control)
- RS232-RS485 Dual port interface
- Synchronizing control panel
- Distribution board with sockets kit and power busbar
- Battery trickle charge ammeter
- Earth leakage protection
- Earth fault protection
- Low fuel level alarm
- Low fuel level shutdown
- High fuel level alarm
- Fuel transfer system control
- Low coolant level shutdown
- High lube oil temp shutdown
- Overload via alarm switch on breaker
- Engine coolant heater controls
- Control panel heater
- Speed adjust switch
- Oil temp displayed on LCD screen
- Additional 8 inputs and outputs