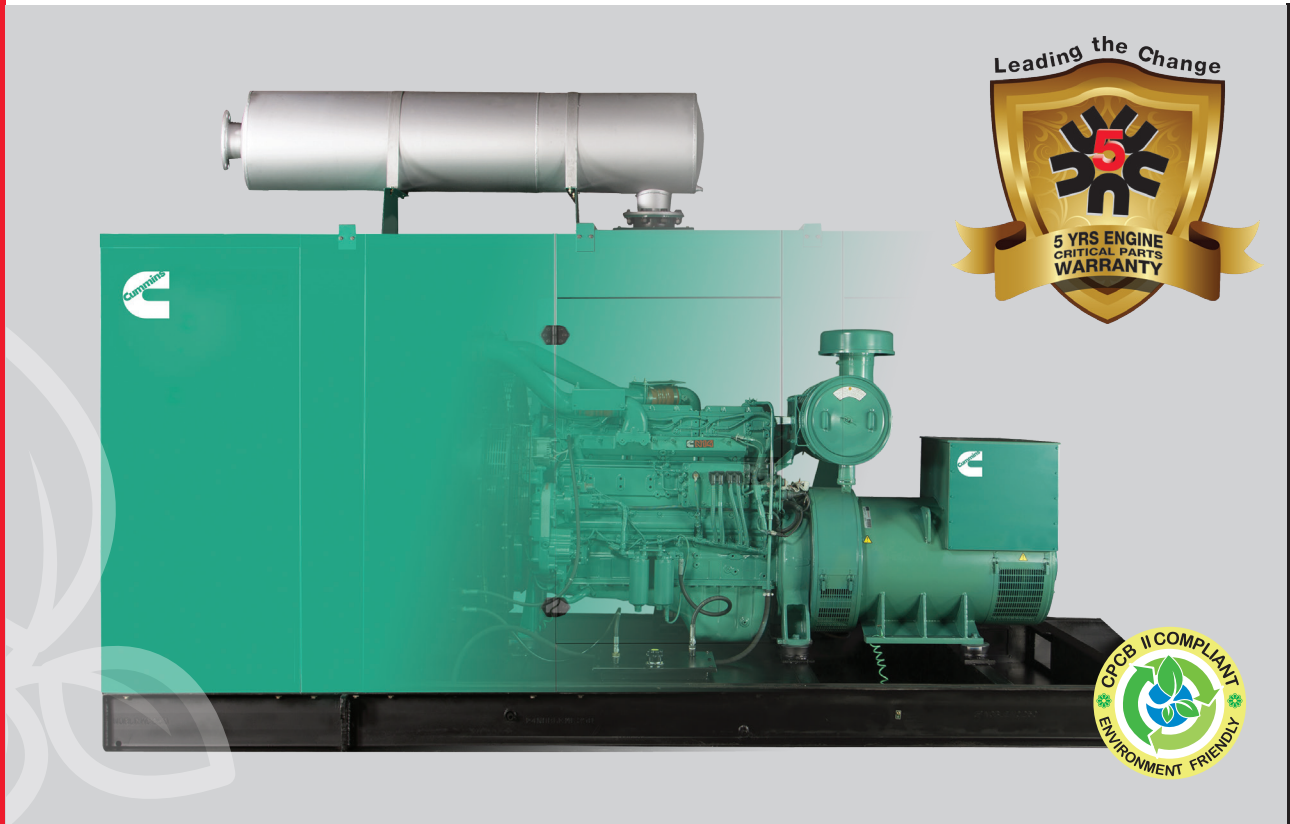




# Diesel Generator Set

## QSN14 Series

365-400 kVA, 292-320 kW Prime



Specification Sheet

### Latest Technology Product with Global Cummins® Platform

- The Cummins® QSN14 series heavy-duty engine and world class Stamford alternator powered diesel generator set
- Class defining Quantum engine technology with fully integrated subsystems
- Advanced in-cylinder technology to meet latest emission norms without any after-treatment device
- Smart aesthetic and superior finish
- Compact in size with optimum power to weight ratio

### Environment Friendly Power

- Class defining technology engine is designed to meet stringent exhaust emission tests as per revised MoEF norms, thus offering environment friendly power.
- The Cummins® diesel generator sets are available with the lowest noise levels in its range

### Lowest Operating Cost and Comprehensive Warranty

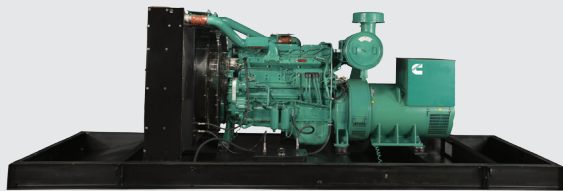
- Highly reliable and durable product
- All elements are designed to work together to maximize efficiency even at part loads, offering the advantage of lowest operating costs.
- 500 Hours / 1 year service interval
- Industry acknowledged best-in-class comprehensive warranty on the entire package including rubber components

### Single Source Power Assurance

- All the major components – the engine, alternator, control system and canopy are designed, manufactured and tested by Cummins India.
- Best and largest customer support network in India, capable of providing round-the-clock service and spares support
- All these things put together, Cummins® offers you SINGLE SOURCE POWER ASSURANCE

## Engine

- Cummins® QSN14 series, 6 cylinder, In-line 4 stroke, radiator cooled engine
- Well designed air handling system with
  - Dry type, Replaceable paper element air cleaner with restriction indicator
  - Air to air aftercooling
  - Optimised Turbocharger for increased altitude capabilities
- Best in class fuel economy with
  - CELECT fuel system with A1 class electronic governing
  - Dual fuel filter system: Pre filter including water separator and Water In Fuel (WIF) sensor and main filter
- Electrical lift pump for faster response
- Standard integral set-mounted radiator system, designed and tested for 50°C ambient temperature
- Full flow spin on lube oil filter
- Plate type lube oil cooler
- First fill of lube oil and coolant
- Electrical starter motor with soft start engagement feature
- Battery charging alternator
- 2 x 12 V DC batteries



## Alternator

- Stamford HC alternator frames from Cummins Generator Technologies
- Brushless type, Screen protected, Revolving field, Self excited alternator conforming to IS/IEC 60034-1
- 3 Phase reconnectable winding with 12 terminals brought out for connection
- Better motor starting capability
- Best in class efficiency
- Compact design with sealed bearings for longer life and lesser maintenance
- Impregnation on all wound components for better mechanical strength

## Control Panel

Control panel is manufactured with 14/16 gauge CRCA sheet and is powder coated for weather-proof and long lasting finish. The control panel consists of the following parts:

- PowerCommand® 1.2 controller
- Aluminum bus bars with suitable capacity with incoming/outgoing terminals
- Indicating lamps for 'Load ON' and 'Set Running'
- Instrument fuses duly wired and ferruled
- MCCB of suitable rating with overload and short circuit protections

## PowerCommand® 1.2 features

The PowerCommand® control system is a microprocessor-based generator set monitoring, metering and control system with LCD display designed to meet the demands of today's engine driven generator sets



- Intuitive operator interface which includes LED backlit LCD display with tactile feel soft-switches and generator set status LED lamps
- Digital AVR for shunt or PMG excitation with torque matching.
- Digital electronic governing with temperature compensation and smart starting.
- SAE J1939 interface to Full Authority Electronic (FAE) engines.
- Remote start-stop
- Engine metering: Oil pressure, Coolant temperature, Battery voltage, Engine speed
- AC Alternator metering: L-L Voltage and L-N Voltage, Current (1 and 3 phase), Volt-Amperes (phase and total) and Frequency.
- Engine protection: Low lube oil pressure, High/Low coolant temperature, Over speed, Battery Over/Under/Weak Volts, Fail to crank/start, Sensor failure.
- AC Alternator protection: Over/Under voltage, Over/Under frequency, Over current, Short circuit and Loss of AC sensing.
- Data logging: Engine hours, Control hours, Engine starts and upto 10 recent fault codes
- Configurable glow plug control
- Configurable cycle cranking
- 12 and 24 Volt DC operation
- Sleep mode
- Programmable I/Os (4 inputs and 2 outputs), expandable with AUX101/102 modules
- Modbus interface (RS485 RTU)
- InPower compatible (PC based service tool)
- Certifications - meets the requirement of relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards

## Silencer

- Hospital grade silencer suitably optimized to meet stringent noise emission standards laid down by MoEF / CPCB

## Mounting Arrangement

- Engine and alternator are mounted on a common MS fabricated base frame with AVM pads.
- Base frame with integral fuel tank is provided with drain plug, air vent, inlet and outlet connection, level indicator and provision for cleaning

## Optional

- **Engine** : Coolant heater, Heat exchanger No Cool
- **Alternator**: PMG
- **Control Panel**:
  - PC3.3
  - Bargraph For PC3.3 Panel with kW, Power factor, Frequency, Current, Voltage
  - Remote HMI

### Acoustic Enclosure

- Specially designed to meet stringent MoEF/ CPCB norms of 75 dBA @ 1mtr at 75% load under free field conditions
- The acoustic enclosure is made of CRCA sheets in munsel green shade and a structural/ sheet metal base frame painted in black.
- High quality noise absorbant and fire-retardant grade acoustic insulation material (Rockwool) complying to IS 8183
- Air inlet louvers specially designed to operate at rated load

- Base lifting for easy handling at customer site
- Designed to have optimum serviceability
- Made on special purpose CNC machines for consistency in quality and workmanship
- 11 tank pretreatment process and UV resistant powder coating of all parts to withstand extreme environment
- Use of special hardware for longer life
- Flush styling - no projections
- Fluid drains for lube oil and fuel
- Fuel filling arrangement inside the enclosure

### Technical Data

#### Generator set specification

	C365D5P	C400D5P
Model	C365D5P	C400D5P
Duty	Prime	Prime
Power Rating kVA / kWe	365/292	400/320
No. of Phases	3	3
Output Voltage and Frequency (V and Hz)	415 V, 50 Hz	415 V, 50 Hz
Power Factor	0.8 (lagging)	0.8 (lagging)
Current (A)	508	556
RPM	1500	1500

#### Engine Specification

	Cummins®	Cummins®
Make	Cummins®	Cummins®
Model	QSN14-G1	QSN14-G2
MoEF Certified Power (bhp)	448	487
Required Power for Rated kVA (bhp)	440	475
Cooling	Liquid Cooled (EG Compleat 50:50)	Liquid Cooled (EG Compleat 50:50)
Aspiration	Turbocharged, Charge Air cooled	Turbocharged, Charge Air cooled
No. of cylinders	6, In-line	6, In-line
Bore (mm) x Stroke (mm)	140 x 152	140 x 152
Compression ratio	16.5: 1	16.5: 1
Displacement (litre)	14	14
Fuel	High Speed Diesel	High Speed Diesel
Fuel consumption @75% load with radiator and fan* (litre/hr)	61.05	67.85
Fuel consumption @100% load with radiator and fan* (litre/hr)	77.69	85.65
Performance class of generator set	ISO 8528-5 G2	ISO 8528-5 G2
Starting system	24 V DC Electrical	24 V DC Electrical
Lube oil specification	CI4+ 15W40	CI4+ 15W40
Lube oil sump capacity, High-Low level (litre)	36-28.4	36-28.4
Total lubrication system capacity (litre)	38.6	38.6
Lube oil consumption @ full load** (litre/hr)	0.08	0.09
Total coolant capacity (litre)	51	51
Exhaust pipe size (inch)	6	6
Total wet weight (Engine+Radiator)** (kg)	1706	1706
Length x Width x Height (Engine) (mm)	1502 x 888 x 1219	1502 x 888 x 1219
Mean Piston speed (m/s)	7.5	7.5
Combustion air intake @100% load (±5%) (cfm)	954	1024
Exhaust Temperature (°C)	475	491

#### Alternator Specification

	Stamford (CGT)	Stamford (CGT)
Make	Stamford (CGT)	Stamford (CGT)
Alternator frame	HCI444F	HCI444F
Enclosure	IP23	IP23
Voltage regulation (Max.)	±1%	±1%
Class of Insulation	H Class	H Class
Winding Pitch	2/3	2/3
Stator Winding	Double layer lap	Double layer lap
Rotor	Dynamically Balanced	Dynamically Balanced
Waveform distortion/ Total Harmonic Distortion	No load < 1.5 %, Non distorting balanced linear load < 5 %	No load < 1.5 %, Non distorting balanced linear load < 5 %
Maximum Unbalanced Load across phases#	less than or equal to 25%	less than or equal to 25%
Telephonic Harmonic factor	< 2%	< 2%

\* Fuel consumption data is based on diesel having specific gravity of 0.85 and conforming to IS:1460. Fuel consumption tolerance is +5%

# With the condition that none of the phases exceeds its rated current

### Rating Definitions

**Prime Power (PRP):**

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528.

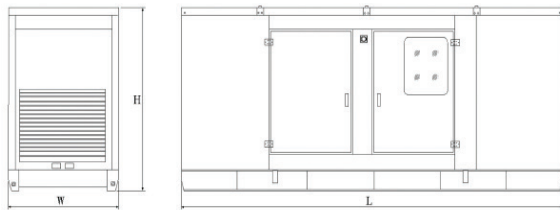
### Conformance Standards

- IS/IEC 60034-1
- IS 1460
- ISO 8528
- ISO 3046
- ISO 9001
- IS 13018

### Typical Enclosed Genset Dimensions

Genset Model	Rating (kVA)	Length (mm)	Width (mm)	Height (mm)	Wet Weight <sup>##</sup> (kg)	Standard Fuel tank Capacity (litre)
C365D5P	365	5500	1900	2150	6165	450
C400D5P	400	5500	1900	2150	6165	450

<sup>##</sup> Approximate weight



Authorised Representative

#### Cummins Power Systems Offices

- Bengaluru: Tel.: (080) 2325 9161 / 63, 2325 9165 / 67  
Fax: (080) 2325 9164
- Chandigarh: Tel.: (0172) 224 0371-73  
Fax: (0172) 224 0372
- Chennai: Tel.: (044) 2446 8110 / 2446 8113  
Fax: (044) 2491 1120
- Gurgaon: Tel.: (0124) 391 0900-01  
Fax : (0124) 391 0916
- Hyderabad: Tel.: (040) 2340 9970 / 2340 9980  
Fax: (040) 2340 9990
- Jaipur: Tel.: (0141) 236 4944  
Fax: (0141) 403 8794
- Kolkata: Tel.: (033) 2287 8065 / 2287 2481  
Fax: (033) 2290 3839
- Lucknow: Tel.: (0522) 230 5049 / 230 5059  
Fax: (0522) 230 5035
- Mohali: Tel.: (0172) 224 0371 / 72 / 73  
Fax: (0172) 224 0371 / 72 / 73
- Vadodara: Tel.: (0265) 233 0627 / 3053627  
Fax: (0265) 234 0623



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**Cummins India Limited  
Power Systems Business**  
Cummins India Office Campus  
Tower-A, 8<sup>th</sup> Floor, S. No. 21,  
Balewadi, Pune – 411 045 (India)

Email: [cpgindia@cummins.com](mailto:cpgindia@cummins.com)  
[www.cumminsindia.com](http://www.cumminsindia.com)