

# Q RANGE DIESEL GENERATOR SET C275D5EQ

## DESCRIPTION

This Cummins® commercial generator set is a fully integrated power generation system, providing optimum performance, reliability, and versatility for Stationary Standby and Prime Power applications.

## STANDARD FEATURES

**Cummins engine** – Rugged 4 cycle Stage IIIA compliant industrial diesel delivers reliable power, and fast response to load changes.

**Alternator** - Stamford UC series self-excited alternator. Optional Permanent Magnet Alternator is also available.

**Cooling system** - Integral set-mounted radiator system, designed and tested for rated ambient temperatures simplifies facility design requirements for rejected heat.

**Control system** - The PowerCommand® control, microprocessor-based generator set monitoring and control system.

**Open and enclosed** genset versions available.



**Warranty** - Backed by a comprehensive warranty and wide distributor and dealer network.

**Coolant heater** - The enclosed version is fitted as standard with a 230V coolant heater to ensure that the engine starts during low ambient temperatures by circulating warmed coolant through the engine. Optional for open versions.

**Enhanced battery system** - Including a flooded/SLI technology battery, charger and disconnecter.

## GENERAL DATA

|                   |                               |        |             |                |                    |                    |                 |
|-------------------|-------------------------------|--------|-------------|----------------|--------------------|--------------------|-----------------|
| <b>GENSET</b>     | C275D5EQ diesel generator set |        |             |                |                    |                    |                 |
| <b>ENGINE</b>     | QSL9-G7                       |        |             |                |                    |                    |                 |
| <b>CONTROLLER</b> | PC1.2                         |        |             |                |                    |                    |                 |
|                   | Model                         | Phases | Voltage (V) | Frequency (Hz) | ESP Power (kVA/kW) | PRP Power (kVA/kW) | Current ESP (A) |
| <b>ALTERNATOR</b> | UCD274K                       | 3      | 400/230     | 50             | 275 / 220          | 250 / 200          | 397             |

## FUEL CONSUMPTION

|         | STANDBY (kVA/kW) |     |     |      | PRIME (kVA/kW) |     |     |      |
|---------|------------------|-----|-----|------|----------------|-----|-----|------|
| RATINGS | 275 / 220        |     |     |      | 250 / 200      |     |     |      |
| LOAD    | 1/4              | 1/2 | 3/4 | Full | 1/4            | 1/2 | 3/4 | Full |
| l/h     | 20               | 35  | 50  | 65   | 18             | 32  | 46  | 59   |

## SPECIFICATIONS

| GENERATOR SET SPECIFICATIONS                           |   |
|--|---|
| Governor type  | Electronic  |
| Performance class                                      | Genset models have been tested in accordance with ISO 8528-5. Consult factory for transient performance information |
| Voltage regulation, no load to full load               | ± 1%  |
| Random voltage variation                               | ± 1%  |
| Frequency regulation                                   | Isochronous   |
| Random frequency variation                             | ± 0.5%  |
| Electromagnetic Compatibility Performance              | Emissions to EN61000-6-3: 2007 + A1: 2011<br>Immunity to EN61000-6-2: 2005  |
| Coolant Heater**                                       | 230VAC, 2250W   |
| Fuel tank capacity                                     | 995 l   |
| Autonomy @ 75%PRP (usable)                             | 21h   |
| Guaranteed sound power level - Lw(A) (Enclosed)        | 97 dB(A)  |
| Sound pressure level - Lp(A) (Enclosed):<br>@1m<br>@7m | 79 dB(A)*<br>69 dB(A)*  |

\*Estimated \*\* Optional Open set version

| ENGINE SPECIFICATIONS                                     |  |              |
|---|--|--------------|
|   | Standby Rating                                     | Prime Rating |
| Engine manufacturer                                       | Cummins  |              |
| Engine model  | QSL9-G7  |              |
| Design  | 4 cycle, in-line, turbocharged, charge air-cooled  |              |
| Displacement, l   | 8.8  |              |
| Rated speed, rpm  | 1500   |              |
| Lube oil capacity, l<br>(Total system with combo filters) | 26.5   |              |
| Gross engine power output, kWm                            | 300  | 271          |
| Bore, mm  | 114  |              |
| Stroke, mm  | 145  |              |
| Cylinder block  | Cast iron, 6 cylinder                              |              |
| Battery charging alternator, A                            | 70   |              |
| Starting voltage, VDC                                     | 24, negative ground                                |              |
| Fuel system   | Direct injection                                   |              |
| Fuel filter   | Spin-on fuel filters with water separator          |              |
| Air cleaner type  | Dry replaceable element with restriction indicator |              |
| Lube oil filter type(s)                                   | Spin-on full flow filter                           |              |
| Standard cooling system                                   | 50 °C ambient radiator                             |              |

## Q RANGE DIESEL GENERATOR C275D5EQ

### ALTERNATOR SPECIFICATIONS

|                           |  |
|---------------------------|--|
| Alternator manufacturer   | Stamford                                   |
| Alternator model          | UCD274K                                    |
| Voltage, VAC              | 400/230                                    |
| Design                    | Brushless, single bearing, revolving field |
| Stator                    | 2/3 pitch                                  |
| Insulation system         | Class H                                    |
| Standard temperature rise | Standby 50 Hz – 163 °C/27 °C ambient       |
| Exciter type              | Self-excited                               |
| Winding                   | 311  |
| Phase rotation            | A (U), B (V), C (W)                        |
| Alternator cooling        | Direct drive centrifugal blower fan        |

### BATTERY SYSTEM

|                      |   |
|----------------------|---|
| Design               | Lead acid, flooded/SLI technology battery |
| Number of batteries  | 2   |
| Battery Voltage, VDC | 2x12                                      |
| Battery Capacity, Ah | 2x140                                     |
| Battery Charger      | Standard. 12/24VDC, 4A                    |
| Battery Disconnect   | Standard                                  |

### INTAKE AIR SYSTEM\*

|                                      | Standby Rating |
|--------------------------------------|----------------|
| Combustion Air, m <sup>3</sup> /min  | 20.7           |
| Maximum air cleaner restriction, kPa | 6.2            |

\*Engine based data

### EXHAUST SYSTEM\*

|   | Standby Rating |
|---|----------------|
| Exhaust gas flow at rated load, m <sup>3</sup> /min | 54.1           |
| Exhaust gas temperature, °C                         | 522            |
| Maximum exhaust back pressure, kPa                  | 10             |

\*Engine based data

### COOLING SYSTEM

|   |      |
|---|------|
| Ambient design, °C (open genset)  | 50   |
| Ambient design, °C (enclosed genset)  | 38   |
| Fan load, kWm   | 10   |
| Coolant capacity (with radiator), l   | 40   |
| Cooling system air flow, m <sup>3</sup> /sec @ 12.7 mm H <sub>2</sub> O (open genset) | 7.93 |

### FUEL FLOW

|  |     |
|--|-----|
| Maximum fuel flow, L/h                               | 159 |
| Maximum fuel inlet restriction, mm Hg (clean filter) | 152 |
| Maximum fuel inlet temperature, °C                   | 71  |

## Q RANGE DIESEL GENERATOR C275D5EQ

### TRANSPORTATION, STORAGE & HANDLING

|                        |                                 |
|------------------------|---------------------------------|
| Lifting configuration* | Single lifting point - Enclosed |
| Forklift lifting       | Enclosed and Open versions      |

\*See outline drawing for details

### GENERATOR SET OPTIONS

| OPTIONAL COMPONENTS                           | OPEN VERSION  | ENCLOSED VERSION  |
|---|---|---|
|   |  |  |
| Coolant Heater                                | o   | •   |
| Residential Muffler                           | o   | •   |
| Industrial Muffler                            | o   | -   |
| Alternator - Permanent Magnet Generator (PMG) | o   | o   |
| Language Literature                           | o   | o   |
| Maintenance Kit                               | o   | o   |
| Optional Warranty                             | o   | o   |

• Standard; o Optional; - Not Available

Note: other options upon request, please contact your Sales Representative for availability and/or for any additional customization request.

### WARRANTY

All components and subsystems are covered by an express limited warranty, please consult details in Global Commercial Warranty Statement depending on your application. Other optional and extended factory warranties and local distributor maintenance agreements are available.

### CONTROL SYSTEM

**PowerCommand 1.2** – The PowerCommand control system is a microprocessor-based generator set monitoring, metering and control system designed to meet the demands of today's engine driven generator sets. The integration of all control functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems. These control systems have been designed and tested to meet the harsh environment in which gensets are typically applied.

#### DESCRIPTION

The PowerCommand generator set control is suitable for use on a wide range of generator sets in non-parallel applications. The PowerCommand control is compatible with shunt or PMG excitation style. It is suitable for use with connectable or non-reconnectable generators, and

it can be configured for any frequency, voltage and power connection from 120-600 VAC Line-to-Line.

Power for this control system is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 30 VDC.

#### MAJOR FEATURES

- 128 x 128 pixels graphic LED backlight LCD.
- Digital voltage regulation. Single phase full wave SCR type regulator compatible with either shunt or PMG systems.
- Digital engine speed governing (where applicable).
- Generator set monitoring and protection.
- Advanced over-current protection.
- English and symbology-based language support.

## BASE CONTROL FUNCTIONS

### HDMI capability.

**Operator adjustments** - The HMI includes provisions for many set up and adjustment functions.

**Data logs** - Includes engine run time, controller on time, number of start attempts.

**Fault history** - Provides a record of the most recent fault conditions with control hours time stamp. Up to 10 events are stored in the control non-volatile memory.

### Alternator data

- Voltage (single or three phase Line-to-Line and Line-to Neutral).
- Current (single or three phase).
- kVA (three phase and total).
- Frequency.

### Engine data

- Starting battery voltage.
- Engine speed.
- Engine temperature.
- Engine oil pressure.

**Service adjustments** – The HMI includes provisions for adjustment of generator set control functions.

Adjustments are protected by a password. Functions include:

- Engine speed governor adjustments.
- Voltage regulation adjustments.
- Cycle cranking.
- Configurable fault set up.
- Configurable output set up.
- Meter calibration.
- Units of measurement.

## PROTECTIVE FUNCTIONS

### Protective functions include:

- Battle short mode.
- Configurable alarm and status inputs.
- Emergency stop.
- Hydro mechanical fuel system engine protection.
- Overspeed shutdown.
- Low lube oil pressure warning.
- High lube oil temperature warning/shutdown.
- High engine temperature warning/shutdown.
- Low coolant temperature warning.

- Sensor failure indication.
- Full authority electronic engine protection.
- General engine protection.
- Low and high battery voltage warning.
- Weak battery warning.
- Fail to start (overcrank) shutdown.
- Fail to crank.
- Cranking lockout.

### Alternator protection

- High AC voltage shutdown (59).
- Low AC voltage shutdown (27).
- Overcurrent warning/shutdown.
- Under frequency shutdown (81 u).
- Over frequency shutdown/warning (81 o).
- Loss of sensing voltage shutdown.
- Field overload shutdown.

## FIELD CONTROL INTERFACE

### Input signals to the base control include:

- Remote start.
- Local and emergency stop.
- Configurable inputs: Control includes (4) input signals from customer.

### Output signals from the PowerCommand control include:

- Configurable relay outputs: Control includes (2) relay output contacts rated at 2 A.

### Configuration & Network

- Advanced service ability using Inpower™ a PC based Software service tool.
- Modbus interface for interconnecting to customer PLC/BMS
- Configurable Inputs and Outputs
- Configurable alarm inputs to cause a shutdown or warning response.

### Warranty & Compliance

- Environmental protection: The Control is designed for reliable operation in harsh environment.
- Warranty and service backed by a comprehensive warranty and worldwide distributor service network.

Note: Please, refer to PC1.2 product literature for additional Information on Control System.



PowerCommand 1.2 control operator/Display panel

## RATINGS DEFINITIONS

### Emergency Standby Power (ESP):

Applicable for supplying power continuously to varying electrical loads for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528-1 and ISO 3046-1, obtained and corrected in accordance with ISO 15550

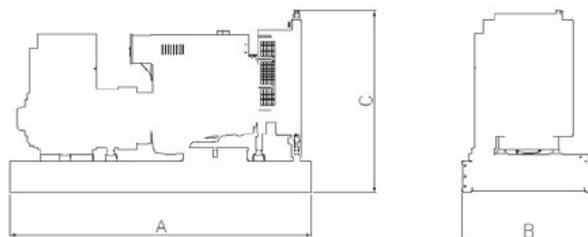
### Limited-Time Running Power (LTP):

Applicable for supplying power to a constant electrical load for limited hours. Limited Time Running Power (LTP) is in accordance with ISO 8528-1.

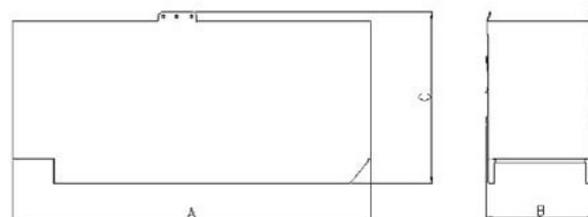
### Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528-1. Ten percent overload capability is available in accordance ISO 3046-1, obtained and corrected in accordance with ISO 15550.

OPEN



ENCLOSED



This outline drawing is to provide representative configuration details for model series only.

**Do not use for installation design**

## DIMENSIONS

| MODEL    | OPEN                |                    |                     |                |                | ENCLOSED            |                    |                     |                |                |
|----------|---------------------|--------------------|---------------------|----------------|----------------|---------------------|--------------------|---------------------|----------------|----------------|
|          | Length<br>"A"<br>mm | Width<br>"B"<br>mm | Height<br>"C"<br>mm | Dry wt.*<br>kg | Wet wt.*<br>kg | Length<br>"A"<br>mm | Width<br>"B"<br>mm | Height<br>"C"<br>mm | Dry wt.*<br>kg | Wet wt.*<br>kg |
| C275D5EQ | 4015                | 1400               | 2115                | 2588           | 2613           | 4015                | 1400               | 2495                | 3155           | 3177           |

\* Note: Weights represent a set with standard features. Wet weights do not include fuel.

## REFERENCE DOCUMENTS

Additional documents are available for consult In Power Suite™ (powersuite.cummins.com) for detailed technical information.

## CODES AND STANDARDS

|  |  |          |   |
|--|--|----------|---|
| ISO 9001<br>ISO 14001                                | This product was manufactured in a facility whose quality management system is certified to ISO 9001 and its Health Safety Environmental Management Systems certified to ISO 14001.  | CE       | This generator set is available as CE marked.                           |
|  |  | UK<br>CA | This generator set is available as UKCA marked.                         |
| 2000/14/EC   | All enclosed products are designed to meet EU Noise Directive 2000/14/EC.  | ISO 8528 | This generator set has been designed to comply with ISO 8528 standards. |
| 2014/30/EU<br>2006/42/EC<br>2011/65/EU<br>2014/35/EU | All products are designed to meet or exceed EU legislation on Electromagnetic Compatibility (EMC), Machinery Safety, Restriction of the use of certain hazardous substances (RoHS) and Electrical Equipment for use within certain voltage limits. |          |   |

**For more information, please contact your local Cummins distributor or visit cummins.com**

Our energy working for you™.