

Q RANGE DIESEL GENERATOR SET C22D5Q

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 industrial diesel delivers reliable power, and fast response to load changes.

Alternator - Stamford S series self-excited alternator. Optional Auxiliary Winding 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 - PowerStart 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 engine is fitted as standard with coolant heater 230 V to ensure engine start during low ambient temperatures by circulating warmed coolant through the engine.

Enhanced battery system - Including a maintenance-free battery, charger and disconnect as standard.

GENERAL DATA

GENSET	C22D5Q diesel generator set						
ENGINE	X2.5-G2						
CONTROLLER	PS0600						
	Model	Phases	Voltage (V)	Frequency (Hz)	ESP Power (kVA/kW)	PRP Power (kVA/kW)	Current ESP (A)
ALTERNATOR	S0L2-G1	3	400/230	50	22 / 18	20 / 16	31.8

FUEL CONSUMPTION

	STANDBY (kVA/kW)				PRIME (kVA/kW)			
RATINGS	22 / 18				20 / 16			
LOAD	1/4	1/2	3/4	Full	1/4	1/2	3/4	Full
l/h	2.5	3.4	4.4	5.6	2.5	3.2	4.1	5.2

SPECIFICATIONS

GENERATOR SET SPECIFICATIONS	
Governor type	Mechanical
Governor regulation class	ISO 8528
Voltage regulation, no load to full load	± 2.5%
Random voltage variation	± 2.5%
Frequency regulation	Droop
Random frequency variation	± 0.75 %
Radio frequency emissions compliance	BS EN 61000-6-2 / BS EN 61000-6-3
Coolant Heater	230VAC, 1000W
Fuel tank capacity	55 l
Autonomy @ 75%PRP	13 h
Sound power level - Lw(A) (Enclosed)	94 dB(A)*
Sound pressure level - Lp(A) (Enclosed): @1m @7m	TBA TBA

* Measured. Declared sound power: 96dB(A), considering 2dB(A) uncertainty factor

ENGINE SPECIFICATIONS		
	Standby Rating	Prime Rating
Engine manufacturer	Cummins	
Engine model	X2.5-G2	
Design	4 cycle, in-line, diesel, naturally aspirated	
Displacement, l	2.5	
Rated speed, rpm	1500	
Lube oil capacity, l (Standard oil pan/Total system with combo filters)	7.3/8.0	
Gross engine power output, kWm	27	24.37
Bore, mm	91.4	
Stroke, mm	127	
Cylinder block	Alloy cast iron, in-line, 3 cylinder	
Battery charging alternator, A	36	
Starting voltage, VDC	12	
Fuel system	Direct injection	
Fuel filter	Spin-on fuel filters with water separator	
Air cleaner type	Heavy Duty Dry replaceable element with restriction indicator	
Lube oil filter type(s)	Spin-on full flow filter	
Standard cooling system	50 °C ambient radiator with coolant recovery system	

ALTERNATOR SPECIFICATIONS

Alternator manufacturer	Stamford
Alternator model	S0L2-G1
Voltage, VAC	400/230
Design	Brushless, single bearing
Stator	2/3 pitch
Insulation system	Class H
Standard temperature rise	125-163 °C
Exciter type	Self-excited
Winding	311
Phase rotation	A (U), B (V), C (W)
Alternator cooling	Direct drive centrifugal blower fan
AC waveform Total Harmonic Distortion (THDV)	No load to full linear load < 5%. For any single harmonic < 2.5%
Telephone Influence Factor (TIF)	< 75 (for 60 Hz)
Telephone Harmonic Factor (THF)	< 2% (for 50 Hz)

BATTERY SYSTEM

Design	Lead acid, sealed, maintenance-free battery
Number of batteries	1
Battery Voltage, VDC	12
Battery Capacity, Ah	62
Battery Charger	Standard. 12/24VDC, 4A
Battery Disconnecter	Standard

INTAKE AIR SYSTEM

	Standby Rating
Combustion Air, m ³ /min	2.30
Maximum air cleaner restriction, kPa	6.2

EXHAUST SYSTEM*

	Standby Rating
Exhaust gas flow at rated load, kg/h	127
Exhaust gas temperature, °C	660
Maximum exhaust back pressure, kPa	3.38

*Engine based data

COOLING SYSTEM

Ambient design, °C (open genset)	50
Ambient design, °C (enclosed genset)	45
Fan load, kWm	0.95
Coolant capacity (with radiator), l	15
Cooling system air flow, m ³ /sec @ 12.7 mm H ₂ O (open genset)	0.78

FUEL FLOW	
Maximum fuel flow, L/h	40
Maximum fuel inlet restriction, mm Hg	73.66
Maximum fuel inlet temperature, °C	60

TRANSPORTATION, STORAGE & HANDLING	
Lifting configuration*	Multi-point (4) - Enclosed
Forklift pockets	Enclosed and Open versions

*See outline drawing for details

GENERATOR SET OPTIONS

- Alternator - Auxiliary Winding (winding 711)

Note: Consult your Sales Representative for availability and/or for any additional customization request.

WARRANTY

All components and subsystems are covered by an express limited one year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available.

CONTROL SYSTEM

Generator set control PowerStart 600 – The PowerStart control is a microprocessor-based generator set monitoring and control system. The control provides a simple operator interface to the generator set, auto/ manual and remote start/stop control and shutdown fault indication. The integration of all control functions into a single control provides enhanced reliability and performance compared to conventional generator set control systems. This control has been designed and tested to meet the harsh environment in which gensets are typically applied.

- The PowerStart generator set control is suitable for use on a wide range of generator sets in non-paralleling applications. It is suitable for use with reconnectable or non-reconnectable generators, can be configured for either 50 Hz or 60 Hz and voltage and power connection from 190-600 VAC line-to-line.
- This control includes an intuitive operator interface that allows for complete genset control as well as system metering, fault annunciation, maintenance alarm, over imbalance current, configuration and diagnostics. The interface includes seven generator set status LED lamps with both internationally accepted symbols and English text to comply with customer needs. The interface also includes an LED backlit LCD

display with tactile-feel soft switches for easy operation and screen navigation. The manual/auto/stop switch function is integrated into the interface panel.

- All data on the control can be viewed by scrolling through screens with the navigation keys. The control displays the current active fault and a time ordered history of the five previous faults.
- Power for this control is derived from the generator set starting batteries and functions over a voltage range from 8VDC to 16 VDC.

MAJOR FEATURES

Operator panel features

- Integrated 128x64 Pixel monochrome graphic LCD Display
- Tactile-feel soft switches for easy LCD display navigation, genset operation and control setup
- LED lamps indicating: Genset Running, Remote Start, AMF Test Active, Genset Shutdown, Warning, Load connected to Utility, Manual Mode, Stop Mode and Auto Mode.

Genset Operation & Fault Management

- Genset monitoring- monitor status of all critical engine and alternator functions
- Digital genset metering (AC and DC)

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- Configurable for single phase or three phase or split phase AC metering
- Genset Protection: protects engine and alternator
- Utility Voltage monitoring and protection
- Configurable time delay for start and stop (cooldown)
- Engine starting includes solid state output to operate external relay to start the engine, fuel shut off (FSO) and glow Plug
- Remote start capability in Auto mode
- Configurable start cranking cycle
- Real time clock for fault and event stamping
- Data Log including engine run time and controller on time Fault History
- Record of the most recent fault events in non-volatile memory
- Emergency stop shut down
- Low fuel level warning using 4-20mA input sensor
- Exerciser clock and time of delay start/stop initiate a test without load.
- Maintenance due alarm based on engine running time or real time clock

Battery Management

- 12 and 24V battery operation
- Genset battery monitoring system to warn against a weak battery connection or low/high voltage
- Sleep mode to minimize starting battery current draw when genset is not operating

AMF Functionality

- Auto Main Failure (AMF): Provides load transfer operation in open transition mode
- AMF Test with or without load options

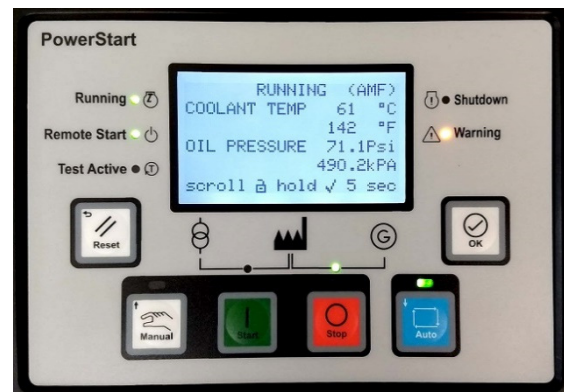
Configuration & Network

- 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
- Certification-suitable for use on generator sets that are designed, manufactured, tested and certified relevant ISO, IEC and CE standards.

Note: Please, refer to PS0600 product literature for additional Information on Control System.



PowerStart 600 control operator/Display

RATINGS DEFINITIONS

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

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.

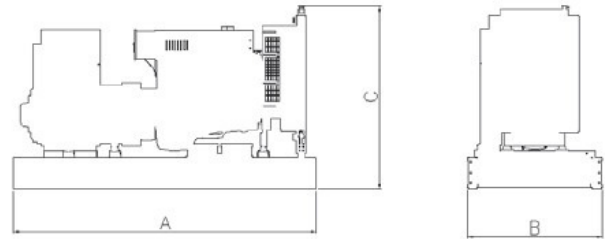
Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

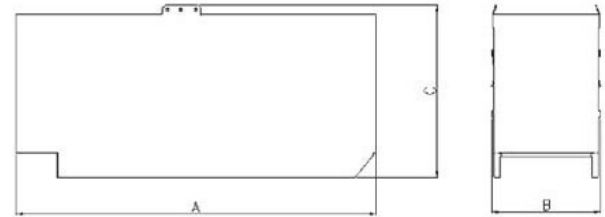
Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS5514.

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 "A" mm	Width "B" mm	Height "C" mm	Dry wt.* kg	Wet wt.* kg	Length "A" mm	Width "B" mm	Height "C" mm	Dry wt.* kg	Wet wt.* kg
C22D5Q	1960	820	1130	564	606	1960	820	1285	715	757

* 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

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 and ISO 14001		The CE marking is only valid when equipment is used in a fixed installation application. Material compliance declaration is available upon request.
			The UKCA marking is only valid when equipment is used in a fixed installation application. Material compliance declaration is available upon request.
2000/14/EC	All enclosed products are designed to meet or exceed EU noise legislation 2000/14/EC step 2006.	ISO 8528	This generator set has been designed to comply with ISO 8528 regulation.
2014/30/EU 2006/42/EC 2011/65/EU 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

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