

2000KW Cummins Diesel Generator

Silent Type | Prime/COP | Parallel Unit | EPA Tier 2

General

Model	WDG-2000-CUM-PAR
Fuel Type	Diesel
Power Rating	2000 kW (1000 kW each)
Frequency	60 Hz
Voltage	Any voltage can be customized
Phase	Single Phase or Three Phase
Enclosure Type	2x Soundproof & Weatherproof
Engine Brand	Cummins
Alternator Brand	Stamford
Controller Model	DeepSea DSE 8610 for synchronization

Engine Data

Engine Model	*Cummins QSK38-G5
Configuration	12-cylinder,
Aspiration	Turbocharged, After Cooled
Bore x Stroke (in.)	6.26 x 6.26 (in.)
Rated Speed (RPM)	1800
Displacement (L)	37.7
Compression Ratio	15:1
Cooling Method	Water Cooled
Governor	Electronic

**1x Cummins Engine + 1x Stamford Alternator per generator.
2 generators are configured into a Parallel Unit.*



Alternator Data

Alternator Model	*Stamford S6L1D-E41
Type	Self-excited, Brushless
Power Factor	0.8
Voltage Regulation	AVR
Insulation System	Class H
Protection Level	IP23

Size & Dimensions

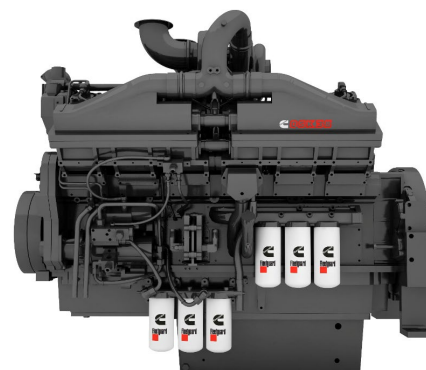
Dimensions (L x W x H)	2 units, each: 230 x 86 x 98 (in.)
Net Weight (lbs.)	2 units, each: approx. 24,200

*** Size & Dimensions - this model is Parallel Unit, meaning there are two (2) of each generator model WDG-1000-CUM-P in this configuration.*



QSK38-G5

EPA Tier 2



Description

The QSK38 is a V-12 cylinder engine with a 38 litre displacement. This Quantum series utilizes sophisticated electronics and premium engineering to provide outstanding performance levels, reliability and versatility for Standby, Prime and Continuous Power applications.



This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

This equipment has been designed and tested to meet EU product safety regulations. Material compliance declaration is available upon request

Features

High pressure fuel pump, Modular Common Rail Fuel System (MCRS) and state of the art integrated electronic control system provide superior performance, efficiency and diagnostics. The electronic fuel pumps deliver up to 1600 bar injection pressure and eliminate mechanical linkage adjustments. The MCRS fuel system utilizes an electric priming pump which is integrated with the off-engine stage-1 fuel filter head and is controlled and powered by the engine ECM. The stage-2 fuel filters are mounted on-engine

CTT (Cummins Turbo Technologies) HX82/HX83/HE851 turbo-charging utilizes exhaust energy with greater efficiency for improved emissions and fuel consumption.

Low Temperature After-cooling - Two-pump Two-loop (2P2L)

Ferrous Cast Ductile Iron (FCD) Pistons - High strength design delivers superior durability.

G-Drive Integrated Design - Each component has been specifically developed and rigorously tested for G-Drive products, ensuring high performance, durability and reliability.

Service and Support - G-Drive products are backed by an uncompromising level of technical support and after sales service, delivered through a world class service network.

1500 rpm (50 Hz Ratings)

Gross engine output			Net engine output			Typical generator set output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
1224/1641	1107/1485	933/1251	1173/1573	1069/1434	895/1200	1121	1401	1020	1276	854	1068

1800 rpm (60 Hz Ratings)

Gross engine output			Net engine output			Typical generator set output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			kWm/BHP			kWe	kVA	kWe	kVA	kWe	kVA
1279/1715	1063/1425	891/1195	1227/1645	1023/1372	851/1141	1162	1452	969	1211	806	1008

General Engine Data

Fuel Rating	FR6797
Type	4 cycle, turbocharged, After-cooled
Bore mm	159
Stroke mm	159
Displacement litre	37.7
Cylinder block	Cast iron, 12 cylinder
Battery charging alternator	55 amps
Starting voltage	24 volt, negative ground
Fuel system	Cummins direct injection MCRS
Fuel filter	Spin-on fuel filters with water separator
Lube oil filter type(s)	Spin-on full flow filter
Lube oil capacity (l)	170
Flywheel dimensions	SAE 0

Coolpac Performance Data

Cooling system design	2 pump - 2 loop
Coolant ratio	50% ethylene glycol; 50% water
Coolant capacity (l)	Engine only – not applicable
Limiting ambient temp.** (°C)	
Fan power (kWm)	
Cooling system air flow (m³/s)**	
Air cleaner type	Dry replaceable element with restriction indicator

Fuel Consumption 1500 (50 Hz)

%	kWm	BHP	L/hr	US Gal./hr
Standby Power				
100	1224	1641	299	79.0
Prime Power				
100	1107	1484	271	71.6
75	830	1113	204	53.7
50	554	742	152	40.0
25	277	371	82	21.7
Continuous Power				
100	933	1250	227	60.0

Fuel Consumption 1800 (60 Hz)

%	kWm	BHP	L/hr	US Gal./hr
Standby Power				
100	1279	1715	315	83.2
Prime Power				
100	1063	1425	261	68.9
75	797	1069	205	54.1
50	532	713	145	38.3
25	265	356	86	22.6
Continuous Power				
100	891	1195	222	58.5

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S6L1D-E4 Wdg.311/312

Electrical Data								
Insulation System	H							
Stator Winding	Double Layer Concentric							
Winding Pitch	2/3							
Winding Leads	12/6							
Winding Number	311/312							
Number of Poles	4							
IP Rating	IP23							
RFI Suppression	BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. Refer to factory for others							
Waveform Distortion	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
Short Circuit Ratio	1/Xd							
Steady State X/R Ratio	18.89							
50 Hz					60 Hz			
Telephone Interference	THF<2%				TIF<50			
Cooling Air Flow	1.41 m³/sec				1.69 m³/sec			
Voltage Series Star (V)	380	400	415	440	416	440	460	480
Voltage Parallel Star (V)*	190	200	208	220	208	220	230	240
Voltage Delta (V)	220	230	240	254	240	254	266	277
kVA Base Rating (Class H) for Reactance Values (kVA)	1000	1050	1050	1010	1150	1200	1250	1300
Saturated Values in Per Unit at Base Ratings and Voltages								
Xd Dir. Axis Synchronous	2.79	2.64	2.45	2.10	3.21	2.99	2.85	2.72
X'd Dir. Axis Transient	0.18	0.17	0.16	0.13	0.20	0.19	0.18	0.17
X''d Dir. Axis Subtransient	0.14	0.14	0.13	0.11	0.16	0.15	0.15	0.14
Xq Quad. Axis Reactance	2.17	2.05	1.91	1.63	2.50	2.33	2.22	2.12
X''q Quad. Axis Subtransient	0.34	0.32	0.30	0.25	0.39	0.36	0.34	0.33
XL Stator Leakage Reactance	0.08	0.07	0.07	0.06	0.09	0.08	0.08	0.08
X2 Negative Sequence Reactance	0.20	0.19	0.18	0.15	0.23	0.21	0.20	0.20
X0 Zero Sequence Reactance	0.08	0.07	0.07	0.06	0.09	0.08	0.08	0.08
Unsaturated Values in Per Unit at Base Ratings and Voltages								
Xd Dir. Axis Synchronous	3.34	3.17	2.94	2.52	3.85	3.59	3.42	3.27
X'd Dir. Axis Transient	0.20	0.19	0.18	0.15	0.23	0.22	0.21	0.20
X''d Dir. Axis Subtransient	0.17	0.16	0.15	0.13	0.19	0.18	0.17	0.16
Xq Quad. Axis Reactance	2.23	2.12	1.97	1.68	2.57	2.40	2.29	2.18
X''q Quad. Axis Subtransient	0.40	0.38	0.35	0.30	0.46	0.43	0.41	0.39
XL Stator Leakage Reactance	0.09	0.08	0.08	0.07	0.10	0.09	0.09	0.09
Xlr Rotor Leakage Reactance	0.10	0.09	0.09	0.07	0.11	0.11	0.10	0.10
X2 Negative Sequence Reactance	0.24	0.23	0.21	0.18	0.28	0.26	0.24	0.23
X0 Zero Sequence Reactance	0.09	0.09	0.08	0.07	0.10	0.10	0.09	0.09

* Parallel Star connection only available with 12 leads winding option

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S6L1D-E4 Wdg.311/312

RATINGS AT 0.8 POWER FACTOR

Class - Temp Rise		Standby - 163/27°C				Standby - 150/40°C				Cont. H - 125/40°C				Cont. F - 105/40°C			
50 Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)*	190	200	208	220	190	200	208	220	190	200	208	220	190	200	208	220
	Delta (V)	220	230	240	254	220	230	240	254	220	230	240	254	220	230	240	254
	kVA	1100	1125	1125	1100	1060	1100	1100	1060	1000	1050	1050	1010	900	945	945	900
	kW	880	900	900	880	848	880	880	848	800	840	840	808	720	756	756	720
	Efficiency (%)	94.8	94.9	95.0	95.2	94.9	95.0	95.1	95.3	95.1	95.1	95.2	95.4	95.3	95.3	95.4	95.5
	kW Input	928	949	947	925	893	927	926	890	841	883	882	847	755	793	792	754

60 Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)*	208	220	230	240	208	220	230	240	208	220	230	240	208	220	230	240
	Delta (V)	240	254	266	277	240	254	266	277	240	254	266	277	240	254	266	277
	kVA	1250	1300	1350	1400	1206	1250	1300	1350	1150	1200	1250	1300	1063	1100	1150	1188
	kW	1000	1040	1080	1120	965	1000	1040	1080	920	960	1000	1040	850	880	920	950
	Efficiency (%)	95.0	95.1	95.1	95.1	95.1	95.2	95.2	95.2	95.2	95.2	95.3	95.3	95.3	95.4	95.4	95.4
	kW Input	1053	1094	1136	1178	1015	1051	1093	1134	967	1008	1050	1091	892	922	964	996

*** Parallel Star connection only available with 12 leads winding option**

De-rates

All values tabulated above are subject to the following reductions:

- 5% when air inlet filters are fitted
- 3% for every 500 meters by which the operating altitude exceeds 1000 meters above mean sea level
- 3% for every 5°C by which the operational ambient temperature exceeds 40°C @ Class H temperature rise (please refer to applications for ambient temperature de-rates at other temperature rise classes)
- For any other operating conditions impacting the cooling circuit please refer to applications

Note: Requirement for operating in an ambient exceeding 60°C and altitude exceeding 4000 meters (for <690V) or 1500 meters (for >690V) must be referred to applications.

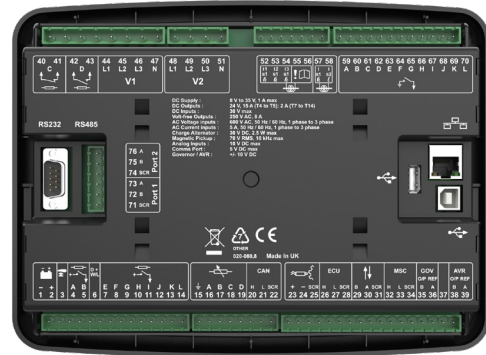
Dimensional and Torsional Drawing

For dimensional and torsional information please refer to the alternator General Arrangement and rotor drawings available on our website (<http://stamford-avk.com/>)

Note: Continuous development of our products means that the information contained in our data sheets can change without notice, and specifications should always be confirmed with Cummins Generator Technologies prior to purchase.

DSE8610 MKII Synchronising & Load Sharing Auto Start Control Module

Part Number: 8610-02



Overview

The DSE8610 MKII is a market-leading Synchronising Auto Start Control Module suitable for use in a multi-generator loadshare system, designed to synchronise up to 32 generators including electronic and non-electronic engines. The DSE8610 MKII monitors the generator and indicates operational status and fault conditions, automatically starting or stopping the engine on load demand or fault conditions.

System alarms are annunciated on the LCD screen (multiple language options available), illuminated LED and audible sounder. The event log records 250 events to facilitate easy maintenance, and an extensive number of fixed and flexible monitoring, metering and protection features are included. Designed to offer increased built in support for active sensors for 0 V to 10 V & 4 mA to 20 mA. Comprehensive communication and system expansion options are available.

Using the DSE PC Configuration Suite Software allows easy alteration of the operational sequences, timers and alarms. With all communication ports capable of being active at the same time, the DSE8610 MKII is ideal for a wide variety of demanding load share applications. The Advanced PLC tool within Configuration Suite provides users with an extremely powerful configuration tool for the most demanding applications.

Key Features

- Slip sync and dead bus synchronising control
- Multi-set communication (MSC) link with optional redundancy
- 3-phase generator and bus sensing with protection
- Latest ECU / ECM support for a wide range of engine manufacturers
- Integrated governor & AVR control
- Customisable shared data via MSC link
- Advanced PLC functionality including multi-purpose PIDs
- Flexible inputs and outputs
- DSENet® expansion support
- PC configuration using DSE Configuration Suite
- Multiple language support
- 4-line high-resolution display
- Manual front panel and automatic control modes
- Rubber sealing gasket (IP65 protection)
- Integrated RS232 and RS485 ports providing Modbus RTU support
- Integrated Ethernet port providing Modbus TCP and SNMP v2c support
- Data logging of up to 20 parameters

Product Documentation

053-182 – DSE8610 MKII Installation Instructions

057-254 – DSE8610 MKII Operator Manual

057-238 – DSE8610 MKII Configuration Suite PC Manual



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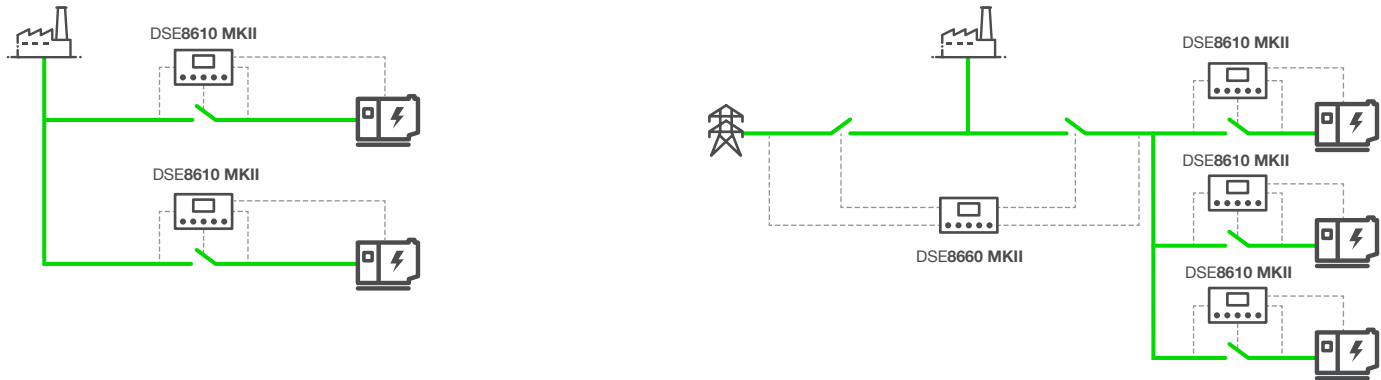
DSE8610 MKII Synchronising & Load Sharing Auto Start Control Module

Part Number: 8610-02

Multi-Set Controller Key Features

- Multiple generator synchronising and droop / isochronous load sharing control
- Advanced load demand schemes including automatic start / stop on load change, genset optimisation and balancing of engine hours
- Multiple mains (utility) and generator synchronising ATS with short / long-term parallel control*
- Mains (utility) failure detection including mains (utility) decoupling detection*
- Based load and peak lopping / shaving control*

Typical Applications



*When used with DSE8660 MKII controllers

Product Documentation

053-182 – DSE8610 MKII Installation Instructions

057-254 – DSE8610 MKII Operator Manual

057-238 – DSE8610 MKII Configuration Suite PC Manual



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