

DATA SHEET

DIESEL GENERATOR 64KW

MODEL#FDK-CD80/H1

50HZ/1500RPM

CUMMINS MODEL: 4BTA3.9G11



General Features:

- ♦ All qualified generator sets are subjected to a comprehensive performance test which includes 50% load, 70% load, 100% load, 110% load and to check, verify that all control systems, alarm and shut-down protection.
- ♦ Equipped with battery charger and 24V high performance maintenance-free lead-acid starting batteries and connecting cables.
- ♦ Stainless galvanized zinc plates with strong corrosion-proof.
- ♦ Vibration isolators between the engine/alternator and base frame.
- ♦ Equipped with industrial silencer and flexible exhaust hose.
- ♦ Designed to comply with ISO8528/GB2820.
- ♦ Powered by Cummins engine and coupled with Stamford alternator.
- ♦ Water jacket preheater, oil heater and double air cleaner, etc. are available.

FDK Diesel Generator Set Data

Genset Model	FDK-CD80/H1
Prime Power	58KW/72KVA
Standby Power	64KW/80KVA
Output Frequency / Rated speed	50Hz/1500rpm
Rated Voltage	230V/400V

Engine Make	Cummins
Engine Model	4BTA3.9G11
Alternator model	Stamford UCI224F
Control System	DSE6020
Phase	Three

(1) **Prime power:** The rating is available for an unlimited of annual operating hours in variable load applications, in accordance with ISO8528-1.A 10% overload is available for a period of 1 hour within 12-hour period of operation, in accordance with ISO 3046-1.

(2) **Standby power:** The rating is applicable for supplying emergency power in variable load applications for up to 200 hours per year in accordance with ISO8528-1. Overload is not allowed.

(3) **Rated voltage:** available with customer requirement.

Engine Specifications (DETAILED in APPENDIX)

Engine Model	4BTA3.9G11
Engine Manufacturer	Cummins (China Dongfeng)
Cylinder quantity	4
Cylinder Arrangement	Vertical in-line
Cycle	Four stroke

Aspiration	Turbo-charged
Bore x Stroke (mm x mm)	102×120
Displacement	3.9L
Compression Ratio	17.3:1
Prime power / Speed (KW/RPM)	70/1500
Standby power/ Speed (KW/RPM)	80/1500



Speed governor	Electrical	Fuel Consumption at 100% load	208 at 1500rpm
Piston Speed	6.0m/s	(g/KWh)	
Friction Energy Output	8.2kw	Starter motor	DC24V
Total Lubrication System Capacity (L)	10.9	Alternator	DC24V
Coolant Capacity (L)	8.3	Low idle	950-1050rpm

Alternator Specifications

Alternator model	UCI224F	Number of phase	3
Alternator manufacturer	STAMFORD	Rated voltage	400V (Available with custom requirements)
Exciter type	Single bearing, Brushless, Self-excited	Power factor	0.8
Rated output prime power	72.5 KVA	Voltage regulation NL-FL	≤±1%
Rated speed	1500 rpm	Insulation grade	H
Rated frequency	50Hz	Protection grade	IP23

Alternator option: Leroy Somer, MECC, Marathon, Engga, Faraday

Control System DSE6020 (DETAILED in INSTRUCTION)

DSE6020 is an advanced control module based on micro-processor, containing all necessary functions for protection of the genset and the breaker control. It can monitor the mains supply, breaker control and automatically start the engine when the mains are abnormal. Accurately measure various operational parameters and display all values and alarms information on the LCD. In addition, the control module can automatically shut down the engine and indicate the engine failure.

FEATURES

- Microprocessor control, with high stability and credibility.
- Monitoring and measuring operational parameters of the mains supply and genset.
- Indicating operation status, fault conditions, all parameters and alarms.
- Multiple protections; multiple parameters display, like pressure, temp. etc.
- Manual, automatic and remote work mode selectable.
- Real time clock for time and date display, overall runtime display, 250 log entries.
- Overall power output display.
- Integral speed/frequency detecting, telling status of start, rated operation, overspeed etc.
- Communication with PC via RS485 OR RS232 interface, using MODBUS protocol.

Soundproof Enclosure Specification

FDK silent generator is designed by professional acoustic engineers based on years of experience. Now we can make the noise of the generator less than 80-85dB(A) at 1m, or 70-75dB(A) at 7m, 60-65dB(A) at 15m.

FEATURES

- Multi-way air intake and exhaust guarantee the power performance of the generator.
- Large-scale impedance combined type silencer effectively reduce noise of the generator.
- Internal high performance rubber damper and flexible materials reduce vibration.
- Base mounted fuel tank supports the generator running for 8 hours.



Optional

Generator set	Alternator	Low environment Temp	ATS
<input type="checkbox"/> Open generator set <input type="checkbox"/> Silent generator set <input type="checkbox"/> Trailer generator set <input type="checkbox"/> ABB MCCB circuit breaker	<input type="checkbox"/> Stamford <input type="checkbox"/> Marathon <input type="checkbox"/> Mecc Alte <input type="checkbox"/> Leroy Somer <input type="checkbox"/> Farady <input type="checkbox"/> Engga	<input type="checkbox"/> Water heater <input type="checkbox"/> Oil heater <input type="checkbox"/> Battery heater	<input type="checkbox"/> CHINT <input type="checkbox"/> SCHNEIDER <input type="checkbox"/> ABB
Fuel system	Control system	Voltage	Synchronized system
<input type="checkbox"/> 12hrs base tank <input type="checkbox"/> 24hrs base tank <input type="checkbox"/> Dual wall base fuel tank <input type="checkbox"/> Outside fuel tank	<input type="checkbox"/> AMF function <input type="checkbox"/> ATS control cabinet <input type="checkbox"/> DSE7320 <input type="checkbox"/> DSE7510 <input type="checkbox"/> GU620A	<input type="checkbox"/> 415/240V <input type="checkbox"/> 400/230V <input type="checkbox"/> 380/220V <input type="checkbox"/> 220/127V <input type="checkbox"/> 200/115V	<input type="checkbox"/> CHINT Cabinet <input type="checkbox"/> SCHNEIDER Cabinet <input type="checkbox"/> DSE8610 Module <input type="checkbox"/> COMAQ Module <input type="checkbox"/> DEIF Module

Dimension & Weight

Open

Overall Size: L×W×H (mm)	1900×740×1300
Weight (kg)	806

Soundproof Version

Overall Size: L×W×H (mm)	2600×1000×1450
Weight (kg)	1380

Sales Promises

- ◆ FDK provides a full line of brand new and high quality products. Each and every unit is strictly factory tested before shipment.
- ◆ Quality warranty is according to our standard conditions: 12 months from BL date or 1000 running hours, whichever comes first.
- ◆ Service and parts are available from FDK or distributors in your location.
- ◆ FDK guarantee use **BRAND NEW & GENUINE MACHINE.**



Dongfeng Cummins Technical Operations



ENGINE MODEL: 4BTA3.9-G11
CURVE & DATASHEET: FR94625

REV 01 MAY2014



Generator Engine Performance Data
DONGFENG CUMMINS ENGINE Co.,LTD
 Xiangfan, Hubei Province, China
<http://www.dcec.com.cn>

Basic Engine Model:
4BTA3.9-G11
FR94625

FR94625 @ 1500 RPM & 1800RPM

Configuration D383030DX02	CPL Code CPL: 4562	Revision 2014/5/20
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Compression Ratio:	17.3:1	Aspiration:	Turbocharger & Aftercooler
Bore:	102 mm	Displacement:	3.9 L
Stroke:	120 mm	No. of Cylinders:	4
Emission Certification:		Fuel System:	BYC PB/Electronic Governor
Governor Regulation:	≤5%		

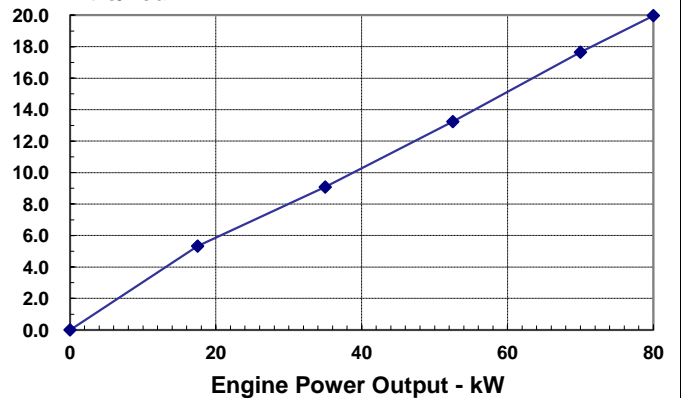
All data is based on the engine operating with fuel system, water pump, and 14.8 in H₂O (3.7 kPa) inlet air restriction with 5.98 in (152mm) inner diameter, and with 2.95 in Hg (10 kPa) exhaust restriction with 4.02 in (102 mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolants as 50% ethylene glycol/50% water. All data is subject to change without notice.

Engine Speed RPM	Standby Power		Prime Power		Continuous Power	
	kW	HP	kW	HP	kW	HP
1500	80	107	70	93		
1800	90	120	80	107		

Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	80	107	206	20.0
PRIME POWER				
100	70	93	208	17.6
75	52.5	70	208	13.2
50	35	47	214	9.1
25	17.5	23	251	5.3
CONTINUOUS POWER				

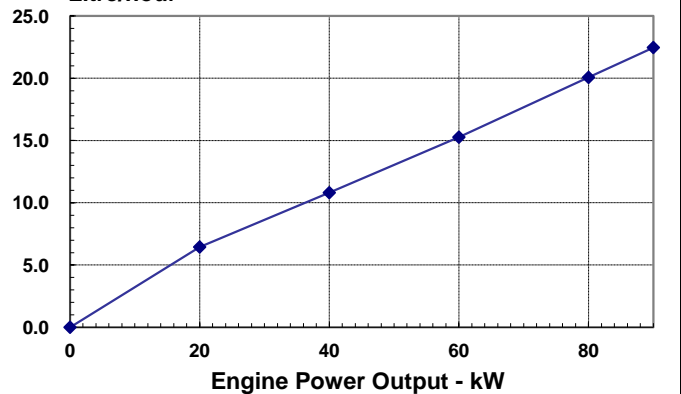
Litre/hour



Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	90	120	206	22.5
PRIME POWER				
100	80	107	207	20.1
75	60	80	210	15.3
50	40	53	223	10.8
25	20	27	266	6.4
CONTINUOUS POWER				

Litre/hour



Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 99kPa (29.61 in. Hg) barometric pressure, 25°C (77°F) inlet air temperature, and 1 kPa (0.30 in. Hg) water vapor pressure with No.0 diesel fuel.

POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

STANDBY POWER RATING is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating.

This rating should be applied where reliable utility power is available. A standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

CONTINUOUS POWER RATING is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

PRIME POWER RATING is applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

UNLIMITED TIME RUNNING PRIME POWER

Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours.

The total operating time at 100% Prime Power shall not exceed 500 hours per year.

A 10% overload capability is available for a period of 1 hour within a 12 hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

LIMITED TIME RUNNING PRIME POWER

Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

Above Source From CUMMINS AEB 26.02

GENERAL ENGINE DATA

Approximate Engine Weight (wet).....	-kg	350
Mass Moment of Inertia of Rotating Components (No Flywheel).....	-kg·m ²	0.143
Center of Gravity from Rear Face of Block.....	-mm	373
Center of Gravity above Crankshaft Centerline.....	-mm	163
Engine Idle Speed.....	-RPM	950-1050
Fire Order.....		1-3-4-2

ENGINE MOUNTING

Maximum (Static) Bending Moment at Rear Face of Block.....	-N.m	1356
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EXHAUST SYSTEM

Maximum Back Pressure.....	-kPa	10
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AIR INTAKE SYSTEM

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Dirty Element.....	-kPa	6.2
— Clean Element.....	-kPa	3.7

LUBRICATION SYSTEM

Engine Oil Pressure for Engine Protection Devices:		
— Idle Speed(Minimum).....	-kPa	207
— Governed Speed(Maximum).....	-kPa	345
Maximum Oil Temperature.....	-°C	121
Minimum Required Lube System Capacity - Sump plus Filters.....	-litre	10.9

FUEL SYSTEM

Type Injection System.....		BYC PB Direct Injection
Maximum Restriction at Lift Pump.....	-kPa	13.6
Maximum Fuel Inlet Temperature.....	-°C	70
Total Drain Flow (constant for all loads).....	-litre/hr	30

COOLING SYSTEM

Coolant Capacity - Engine Only.....	-litre	8.3
Maximum Coolant Friction Head External to Engine..	-kPa	35
-1800 rpm.....		
-1500 rpm.....	-kPa	28
Maximum Static Head of Coolant Above Engine Crank Centerline.....	-m	14
Standard Thermostat (Modulating) Range.....	-°C	83 - 95
Minimum Pressure Cap.....	-kPa	69
Maximum Top Tank Temperature for Standby / Prime Power.....	-°C	104 / 100

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement).....	-volt	12V	24V
Battery Charging System, Negative Ground.....	-ampere	63	40
Maximum Allowable Resistance of Cranking Circuit.....	-ohm	0.00075	0.002
Minimum Recommended Battery Capacity			
—Cold Soak @ 0 to 32-F (-18 to 0-C).....	-0°F CCA	625	312

EMISSIONS

Gaseous Emissions per GB 20891-2007, at 1500rpm:

—Weight-Specific NOx.....	g/kW.h
—Weight-Specific HC.....	g/kW.h
—Weight-Specific CO.....	g/kW.h
—Weight-Specific Particulates.....	g/kW.h

Gaseous Emissions per GB 20891-2007, at 1800rpm:

—Weight-Specific NOx.....	g/kW.h
—Weight-Specific HC.....	g/kW.h
—Weight-Specific CO.....	g/kW.h
—Weight-Specific Particulates.....	g/kW.h

Fuel Rating Option used for these Data: **FR94625**

Governed Engine Speed.....	-rpm
Engine Idle Speed.....	-rpm
Gross Engine Power Output.....	-kW
Piston Speed.....	-m/s
Friction Horsepower.....	-kW
Engine Water Flow to Engine:.....	-litre/sec.
Intake Air Flow.....	-litre/sec.
Exhaust Gas Flow.....	-litre/sec.
Exhaust Gas Temperature.....	-°C
Radiated Heat to Ambient.....	-kW
Heat Rejection to Coolant.....	-kW
Heat Rejection to Fuel.....	-kW

STANDBY POWER		PRIME POWER	
1800	1500	1800	1500
950- 1050	950- 1050	950- 1050	950- 1050
90	80	80	70
7.2	6.0	7.2	6.0
8.2	8.2	8.2	8.2
TBD	TBD	TBD	TBD
101	70	93	64
210	134	188	125
405	548	393	526
TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD
TBD	TBD	TBD	TBD

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided N/A = Not Applicable
 All data is subject to change without notice, sorry for inform.
 Dongfeng Cummins Engine Co., Ltd.

N.A. = Not Available