# FDK ENERGY GUANGDONG FUDIANKANG DIESEL GENSET CO., LTD SHENZHEN FUDIANKANG DIESEL GENESET CO., LTD

Tel: 86-13710087995

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# **DATA SHEET**

**DIESEL GENERATOR 74KW** MODEL#FDK-CD95/H1 50HZ/1500RPM CUMMINS MODEL: 6BT5.9G2



#### **General Features:**

- All qualified generator sets are subjected to a comprehensive performance test which includes 50% load, 70% load, 100% ٠ 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 ٠ cables.
- Stainless galvanized zinc plates with strong corrosion-proof. ٠
- Vibration isolators between the engine/alternator and base frame.
- Equipped with industrial silencer and flexible exhaust hose. ٠
- 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 i	Jala		
Genset Model	FDK-CD95/H1	Engine Make	Cummins
Prime Power	68KW/85KVA	Engine Model	6BT5.9G2
Standby Power	74KW/93KVA	Alternator model	Stamford UCI224G
Output Frequency / Rated speed	50Hz/1500rpm	Control System	DSE6020
Rated Voltage	230V/400V	Phase	Three

#### **FDK Diesel Generator Set Data**

(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)

6BT5.9G2	Aspiration	Turbo-charged
Cummins (China	Bore x Stroke (mm x mm)	102×120
Dongfeng)	Displacement	5.9L
6	Compression Ratio	17.3:1
Not available	Prime power / Speed (KW/RPM)	86/1500
Four stroke	Standby power/ Speed (KW/RPM)	92/1500
	Cummins (China Dongfeng) 6 Not available	Cummins (China     Bore x Stroke (mm x mm)       Dongfeng)     Displacement       6     Compression Ratio       Not available     Prime power / Speed (KW/RPM)





ISO9001:2008 FDK reserves the right to change the specifications and designs without noice.

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Speed governor	Electronic
Piston Speed	6.0m/s
Friction Energy Output	12.7kw
Total Lubrication System Capacity (L)	16.4
Coolant Capacity (L)	9.9

	Web: www.fdl	kenei	rgy.com	Ema	ail: info@fdkenergy.com
Fuel	Consumption	at	100%	load	208 at 1500rpm
(g/KV	Vh)				
Starte	er motor				DC24V
Alterr	nator				DC24V
Low i	dle				950-1050rpm
-					

#### **Alternator Specifications**

Alternator model	UCI224G	Number of phase	3
Alternator manufacturer	STAMFORD	Rated voltage	400V (Available with
Exciter type	Single bearing, Brushless,		custom requirements)
	Self-excited	Power factor	0.8
Rated output prime power	85 KVA	Voltage regulation NL-FL	≤±1%
Rated speed	1500 rpm	Insulation grade	н
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. ٠

#### 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**

- ٠ 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. ٠





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Op	tional						
Gen	erator set	Alte	rnator	Low	environment Temp	ATS	
	Open generator set		Stamford		Water heater		CHINT
	Silent generator set		Marathon		Oil heater		SCHNEIDER
	Trailer generator set		Mecc Alte		Battery heater		ABB
	ABB MCCB circuit breaker		Leroy Somer				
			Farady				
			Engga				
Fue	system	Con	trol system	Volta	age	Syn	chronized system
	12hrs base tank		AMF function		415/240V		CHINT Cabinet
	24hrs base tank		ATS control cabinet		400/230V		SCHNEIDER Cabinet
	Dual wall base fuel tank		DSE7320		380/220V		DSE8610 Module
	Outside fuel tank		DSE7510		220/127V		COMAQ Module
			GU620A		200/115V	п	DEIF Module

### **Dimension & Weight** Open

#### **Soundproof Version**

Overall Size:	2250×800×1300	Overall Size:	3200×1130×1715
L×W×H (mm)		L×W×H (mm)	
Weight (kg)	1040	Weight (kg)	1720

#### **Sales Promises**

- FDK provides a full line of brand new and high quality products. Each and every unit is strictly factory tested before ۵ 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 Techical Operations



## ENGINE MODEL: 6BT5.9-G2 CURVE & DATASHEET: FR93146

REV 01 150CT2013

Currentine	Generator Engine Performance Data	Basic Engine Model:		4500 DDM 8	
	DONGFENG CUMMINS ENGINE Co., LTD	6BT5.9-G2	FR93140 @	1500 RPM &	
DCEC	Xiangfan, Hubei Province, China	ED00440	Configuration	CPL Code	Revision
	http://www.dcec.com.cn	FR93146	D402078GX02	CPL: 3076	2013/10/15
Compression Ratio	b: <b>17.3:1</b>	Aspiration:	Turbochanger		
Bore:	102 mm	Displacement:	5.9 L		
Storke:	120 mm	No. of Cylinders:	6		
Emission Certificat	ion:	Fuel System:	BYC A/Electronic	c Governor	
Governor Regulation	on: <b>≤5%</b>				

All data is based on the engine operating with fuel system, water pump, and 14.8 in  $H_2O$  (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.

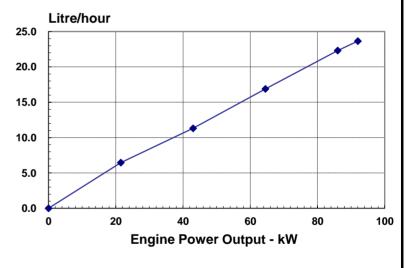
Engine Speed	Standb	y Power	Prime Pov	ver	Continuo	us Power
RPM	kW	HP	kW	HP	kW	HP
1500	92	123	86	115		
1800	110	147	100	133		

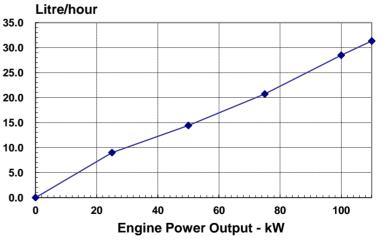
## Engine Performance Data @ 1500 RPM

OUTPUT	Γ POWE	R	FUEL CONSUM	1PTION
%	kW	HP	g/kW.h	L/h
STANDE	BY POW	ER		
100	92	123	212	23.6
PRIME F	POWER			
100	86	115	214	22.3
75	64.5	86	216	16.9
50	43	58	217	11.3
25	21.5	29	248	6.5
CONTIN	UOUS F	POWER		

### Engine Performance Data @ 1800 RPM

OUTPU	T POWE	R	FUEL CONSUM	PTION
%	kW	HP	g/kW.h	L/h
STANDE	BY POW	ER		
100	110	147	235	31.3
PRIME F	POWER			
100	100	133	235	28.5
75	75	100	228	20.7
50	50	67	238	14.4
25	25	33	297	9.0
CONTIN	IUOUS F	POWER		





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.

Above Source From CUMMINS AEB 26.02

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.

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Approx	imate Engine Weight (wet)	-kg	411
Mass M	Noment of Inertia of Rotating Components (No Flywheel)	-kg·m <sup>2</sup>	0.25
Center	of Gravity from Rear Face of Block	-mm	544
Center	of Gravity above Crankshaft Centerline	-mm	155
Engine	Idle Speed	-RPM	750-850
Fire Or	der		1-5-3-6-2-4
ENGINE MOU	INTING		
	um (Static) Bending Moment at Rear Face of Block	N.m	1356
EXHAUST S	YSTEM		
Maximu	um Back Pressure	-kPa	10
AIR INTAKE	evetem		
	um Intake Air Restriction with Heavy Duty Air Cleaner	L/D a	<u> </u>
	— Dirty Element		6.2
-	– Clean Element	-kPa	3.7
LUBRICATIO	IN SYSTEM		
Engine	Oil Pressure for Engine Protection Devices:		
	— Idle Speed(Minimum )	-kPa	207
-			
	— Governed Speed(Maximum )	-kPa	345
-	— Governed Speed(Maximum ) um Oil Temperature		345 121
- Maximu		-°C	
- Maximu	um Oil Temperature m Required Lube System Capacity - Sump plus Filters	-°C	121
۔ Maximu Minimu FUEL SYSTE	um Oil Temperature m Required Lube System Capacity - Sump plus Filters	-°C litre	121 16.4
۔ Maximu Minimu <b>FUEL SYSTE</b> Type In	um Oil Temperature m Required Lube System Capacity - Sump plus Filters EM njection System	-°C litre .BYC A I	121 16.4
۔ Maximu Minimu <b>FUEL SYSTE</b> Type In Maximu	um Oil Temperature m Required Lube System Capacity - Sump plus Filters M njection System um Restriction at Lift Pump	-°C litre . BYC A I kPa	121 16.4 Direct Injection
- Maximu Minimu <b>FUEL SYSTE</b> Type In Maximu Maximu	um Oil Temperature m Required Lube System Capacity - Sump plus Filters EM njection System	-°C litre .BYC A I kPa ℃	121 16.4 Direct Injection 13.6 40
- Maximu Minimu <b>FUEL SYSTE</b> Type In Maximu Maximu Total D	um Oil Temperature m Required Lube System Capacity - Sump plus Filters ijection System um Restriction at Lift Pump um Fuel Inlet Temperature irain Flow (constant for all loads)	-°C litre .BYC A I kPa ℃	121 16.4 Direct Injection 13.6 40
- Maximu Minimu FUEL SYSTE Type In Maximu Maximu Total D	um Oil Temperature m Required Lube System Capacity - Sump plus Filters EM njection System um Restriction at Lift Pump um Fuel Inlet Temperature rain Flow (constant for all loads)	-°C litre BYC A I kPa ℃ litre/hr	121 16.4 Direct Injection 13.6 40 30
- Maximu Minimu FUEL SYSTE Type In Maximu Maximu Total D COOLING SY Coolan	um Oil Temperature m Required Lube System Capacity - Sump plus Filters m Restriction System um Restriction at Lift Pump um Fuel Inlet Temperature rain Flow (constant for all loads) <b>(STEM</b> t Capacity - Engine Only	-°C litre BYC A I kPa °C litre/hr	121 16.4 Direct Injection 13.6 40 30 7.9
- Maximu Minimu FUEL SYSTE Type In Maximu Maximu Total D COOLING SY Coolan	um Oil Temperature m Required Lube System Capacity - Sump plus Filters injection System um Restriction at Lift Pump um Fuel Inlet Temperature rrain Flow (constant for all loads) <b>/STEM</b> t Capacity - Engine Only um Coolant Friction Head External to Engine1800 rpm	-°C -litre BYC A I -kPa -°C -litre/hr	121 16.4 Direct Injection 13.6 40 30 7.9 35
- Maximu Minimu FUEL SYSTE Type In Maximu Maximu Total D COOLING SY Coolan Maximu	um Oil Temperature m Required Lube System Capacity - Sump plus Filters EM njection System um Restriction at Lift Pump um Fuel Inlet Temperature rrain Flow (constant for all loads) rrain Flow (constant for all loads) (STEM t Capacity - Engine Only um Coolant Friction Head External to Engine1800 rpm -1500 rpm	-°C litre BYC A I kPa °C litre/hr litre -kPa -kPa	121 16.4 Direct Injection 13.6 40 30 7.9 35 28
- Maximu Minimu FUEL SYSTE Type In Maximu Total D COOLING SY Coolan Maximu	um Oil Temperature m Required Lube System Capacity - Sump plus Filters EM njection System um Restriction at Lift Pump um Fuel Inlet Temperature um Fuel Inlet Temperature rain Flow (constant for all loads) YSTEM t Capacity - Engine Only um Coolant Friction Head External to Engine1800 rpm -1500 rpm	-°C litre kPa ℃ litre/hr litre kPa kPa m	121 16.4 Direct Injection 13.6 40 30 7.9 35 28 14
- Maximu Minimu FUEL SYSTE Type In Maximu Total D COOLING SY Coolan Maximu Maximu Standa	um Oil Temperature m Required Lube System Capacity - Sump plus Filters m Restriction System um Restriction at Lift Pump um Fuel Inlet Temperature rrain Flow (constant for all loads) <b>/STEM</b> t Capacity - Engine Only um Coolant Friction Head External to Engine1800 rpm -1500 rpm um Static Head of Coolant Above Engine Crank Centerline rd Thermostat (Modulating) Range	-°C litre kPa ℃ litre/hr litre kPa m °C	121 16.4 Direct Injection 13.6 40 30 7.9 35 28 14 82 - 95
- Maximu Minimu FUEL SYSTE Type In Maximu Total D COOLING SY Coolan Maximu Standa Minimu	um Oil Temperature m Required Lube System Capacity - Sump plus Filters EM njection System um Restriction at Lift Pump um Fuel Inlet Temperature um Fuel Inlet Temperature rain Flow (constant for all loads) YSTEM t Capacity - Engine Only um Coolant Friction Head External to Engine1800 rpm -1500 rpm	-°C -litre BYC A I -kPa -°C -litre/hr -litre -kPa -m -°C -kPa	121 16.4 Direct Injection 13.6 40 30 7.9 35 28 14

## FR93146 (Continued) Page: 3

ELECTRICAL SYSTEM Cranking Motor (Heavy Duty, Po	ositive Engagement)		-volt	12V	24V
Battery Charging System, Nega	•••			63	24 v 40
Maximum Allowable Resistance				0.00075	0.002
Minimum Recommended Batter	-				
—Cold Soak @ 0 to 32-F	(-18 to 0-C)		-0°F CCA	625	312
EMISSIONS					
Gaseous Emissions per GB 208					
—Weight-Specific NOx				•	
—Weight-Specific HC				-	
—Weight-Specific CO				-	
—Weight-Specific Particul	lates			g/kW.h	
Gaseous Emissions per GB 208					
—Weight-Specific NOx				•	
—Weight-Specific HC				g/kW.h	
—Weight-Specific CO —Weight-Specific Particul	lates			-	
—Weight-Specific CO	lates			g/kW.h	POWER
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: <b>FR</b>	lates	STANDB	POWER	g/kW.h	E POWER
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: FR Governed Engine Speed	lates <b>893146</b> rpm	<b>STANDB</b> 1800	<b>Y POWER</b> 1500	g/kW.h PRIME 1800	1500
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: <b>FR</b>	lates <b>893146</b> rpm rpm	STANDB	POWER	g/kW.h	
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: <b>FR</b> Governed Engine Speed Engine Idle Speed Gross Engine Power Output	lates <b>893146</b> rpm rpm kW	<b>STANDB</b> 1800 750-850	<b>Y POWER</b> 1500 750-850	PRIME 1800 750-850	1500 750-8
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: FR Governed Engine Speed Engine Idle Speed Gross Engine Power Output Piston Speed	lates <b>?93146</b> rpm rpm kW m/s	<b>STANDB</b> 1800 750-850 110	<b>Y POWER</b> 1500 750-850 92	PRIME 1800 750-850 100	1500 750-8 86
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: <b>FR</b> Governed Engine Speed. Engine Idle Speed. Gross Engine Power Output. Piston Speed. Friction Horsepower.	lates <b>R93146</b> rpm rpm kW m/s kW	<b>STANDB</b> 1800 750-850 110 7.2	<b>7 POWER</b> 1500 750-850 92 6.0	PRIME 1800 750-850 100 7.2	1500 750-89 86 6.0
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: FR Governed Engine Speed Engine Idle Speed Gross Engine Power Output Piston Speed Friction Horsepower Engine Water Flow to Engine:	lates <b>R93146</b> rpm rpm kW m/s kW litre/sec.	<b>STANDB</b> 1800 750-850 110 7.2 12.7	<b>Y POWER</b> 1500 750-850 92 6.0 12.7	PRIME 1800 750-850 100 7.2 12.7	1500 750-89 86 6.0 12.7
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: FR Governed Engine Speed Engine Idle Speed Gross Engine Power Output Piston Speed Friction Horsepower Engine Water Flow to Engine: ntake Air Flow	lates <b>R93146</b> 	<b>STANDB</b> 1800 750-850 110 7.2 12.7 2.8	<b>Y POWER</b> 1500 750-850 92 6.0 12.7 2.0	PRIME 1800 750-850 100 7.2 12.7 2.8	1500 750-89 86 6.0 12.7 2.0
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: FR Governed Engine Speed Engine Idle Speed Gross Engine Power Output Piston Speed Friction Horsepower Engine Water Flow to Engine: Intake Air Flow Exhaust Gas Flow.	lates	<b>STANDB</b> 1800 750-850 110 7.2 12.7 2.8 112	<b>Y POWER</b> 1500 750-850 92 6.0 12.7 2.0 108	PRIME 1800 750-850 100 7.2 12.7 2.8 111	1500 750-89 86 6.0 12.7 2.0 100
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: <b>FR</b> Governed Engine Speed Engine Idle Speed	lates	<b>STANDB</b> 1800 750-850 110 7.2 12.7 2.8 112 319	<b>Y POWER</b> 1500 750-850 92 6.0 12.7 2.0 108 280	PRIME 1800 750-850 100 7.2 12.7 2.8 111 312	1500 750-89 86 6.0 12.7 2.0 100 250
—Weight-Specific CO —Weight-Specific Particul Fuel Rating Option used for these Data: FR Governed Engine Speed. Engine Idle Speed. Gross Engine Power Output. Piston Speed. Friction Horsepower. Engine Water Flow to Engine: Intake Air Flow. Exhaust Gas Flow. Exhaust Gas Temperature.	lates	<b>STANDB</b> 1800 750-850 110 7.2 12.7 2.8 112 319 577	<b>Y POWER</b> 1500 750-850 92 6.0 12.7 2.0 108 280 565	PRIME 1800 750-850 100 7.2 12.7 2.8 111 312 564	1500 750-83 86 6.0 12.7 2.0 100 250 526

#### ALL DATA CERTIFIED WITHIN 5%

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

N.A. = Not Available