BPD150S3-C

150 KVA DIESEL GENERATOR

FEATURES & BENEFITS

- Maximum 165 kVA, 380V, 1500 RPM
- Constant voltage AVR (Automatic Voltage Regulator)
- 24 Volt Electric Starter
- 280 Litre Fuel Tank, 10 Hours @ 75% load
- Silent Version (±72dBA)
- Six cylinder, Turbo-Charged, water cooled diesel engine
- Three Phase Output
- DeepSea DSE6120 Digital Control Panel
- Low oil pressure system
- Low water cut out engine protection

GENERAL DATA	
Model:	BPD150S3-C
Prime Power (P.R.P):	150 kVA
Stand-by Power (L.T.P):	165 kVA
Amps:	250 A
Power Factor / COS:	0.8
Frequency:	50 Hz
Voltage:	380 V
Phases:	Three Phase
Engine Speed:	1500 RPM
Length:	3100 mm
Width:	1090 mm
Height:	1950 mm
Weight:	1960 kg's
Tank Capacity:	280 l

ADDITIONAL	
Running Time:	10 Hours @ 75% load
Structure Type:	Silent
Noise Level (7m):	72 dBA
Auto Voltage Regulator:	Constant voltage AVR
ISO9001 Certified:	Yes
CE Certified:	Yes
Fuel Cons. @ 100% Load:	34
Fuel Cons. @ 75% Load:	26
Fuel Cons. @ 50% Load:	17

ENGINE DATA	
Brand:	Cummins
Model:	6BTAA5.9-G12
Type:	Six cylinder, Turbo-Charged, water cooled diesel engine
Starting System:	24 Volt Electric Starter
Auto-Decompression:	Yes
Cubic Capacity (l):	5.9
Compression Ratio:	17.3:1
Rated Power (kW/RPM):	155 / 1500
Fuel Type:	Diesel
Lube Oil:	15W40
Low Pressure Alert:	Yes
Low Fuel Cut Out:	Yes

CONTROL PANEL	
Model:	DeepSea DSE6120
Type:	Digital Control Panel
Analogue Inputs:	6
Mains Phase Voltage:	Yes
Mains Line Voltage:	Yes

ALTERNATOR	
Model:	LA274G120
Pole Number:	4
Excitation Mode:	Self Excitation

Maputo, Moçambique

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Dongfeng Cummins

Techical Operations

ENGINE MODEL： 6BTAA5.9-G12

CURVE & DATASHEET： FR94438

REV 01 20MAY2014

Industrial Engine Performance Data DONGFENG CUMMINS ENGINE Co.,LTD Xiangfan, Hubei Province, China http://www.dcec.com.cn	Basic Engine Model: **6BTAA5.9-G12** **FR94438**	**140kW@1500rpm** **150kW@1800rpm**		
		Configuration	**CPL Code**	**Revision**
		D403076GX03	**4283**	**2014/5/20**

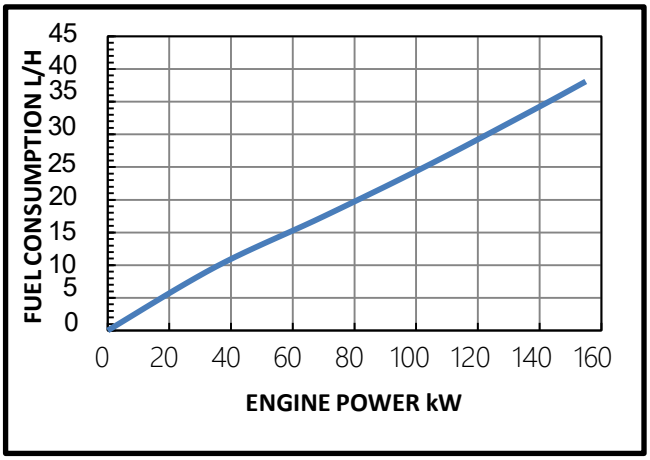
Compression Ratio:	**17.3:1**	Aspiration:	**Turbocharged & Charge Air Cooled**
Bore:	**102 mm**	Displacement:	**5.9 L**
Storke:	**120 mm**	No. of Cylinders:	**6**
Emission Certification:		Fuel System:	**BYC P7100/Electronic Governor**
Governor Regulation:	**≤5%**		

All data is based on the engine operating with fuel system, water pump, and 14.85 in H_2O (3.7 kPa) inlet air restriction , and with 2.95 in Hg (10 kPa) exhaust restriction ; not included are alternator,fan, optional equipment and driven components.

Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	kW	HP	kW	HP	kW	HP
1500	155	207	140	187		
1800	165	220	150	200		

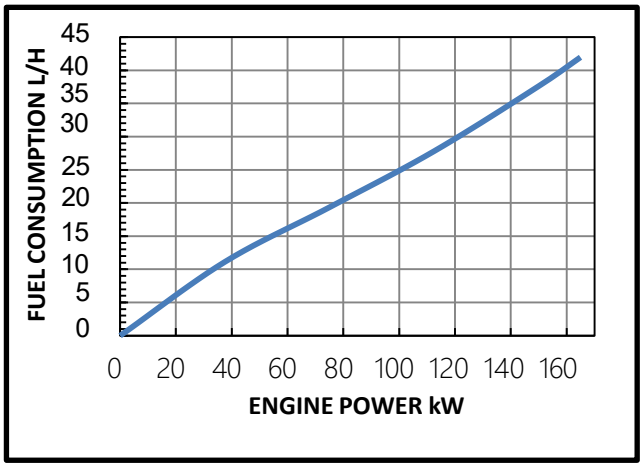
Engine Performance Date @ 1500RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	155	207	204	38
PRIME POWER				
100	140	187	203	34
75	105	140	202	26
50	70	93	207	17
25	35	47	231	10
CONTINUOUS POWER				



Engine Performance Date @ 1800RPM

OUTPUT POWER			FUEL CONSUMPTION	
%	kW	HP	g/kW.h	L/h
STANDBY POWER				
100	165	220	211	42
PRIME POWER				
100	150	200	208	38
75	112.5	150	205	28
50	75	100	214	19
25	37.5	50	246	11
CONTINUOUS POWER				



Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with GB/T18297 conditions of 100kPa (29.53 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. The engine may be operated without changing the fuel setting up to 1600 m (5250ft.) altitude.

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 (dry)	-kg	413
Mass Moment of Inertia of Rotating Components (No Flywheel)	-kg·m^2	0.25
Center of Gravity from Front Face of Block	-mm	391
Center of Gravity above Crankshaft Centerline	-mm	140

ENGINE MOUNTING

Maximum (Static) Bending Moment at Front Support Mounting Surface	-N.m	435
Maximum (Static) Bending Moment at Side Pad Mounting Surface	-N.m	TBD
Maximum (Static) Bending Moment at Rear Face of Block	-N.m	1356
Moment of Inertia of Complete Engine		
— Roll Axis	-kg·m^2	14.8
— Pitch Axis	-kg·m^2	36.9
— Yaw Axis	-kg·m^2	31.9

EXHAUST SYSTEM

Maximum Back Pressure	-kPa	10
Exhaust Pipe Size Normally Acceptable	-mm	75
Maximum Static Supported Weight at the Turbocharger Outlet Flange	-N.m	13.5
Exhaust Manifold Insulation Acceptable	-Yes/No	No
Turbocharger Insulation Acceptable	-Yes/No	No

CHARGE AIR COOLING SYSTEM

Maximum allowable pressure drop across charge air cooler and OEM CAC piping(IMPD):	-kPa	13
Maximum Intake Manifold Temperature Differential (Ambient to IMT) (IMTD	-℃	25
Intake manifold temperature for Fan-ON	-℃	50
Intake manifold air temperature derate/alarm temperature	-℃	58

AIR INTAKE SYSTEM

Maximum Intake Air Restriction with Heavy Duty Air Cleaner		
— Clean Element	-kPa	3.7
— Dirty Element	-kPa	6.2
Minimum Dirt Holding Capacity with Heavy Duty Air Cleaner	-g/cfm	53
Maximum Temperature Rise from Ambient to the Inlet of the Turbocharger	-℃	17
Recommended intake piping size (inner diameter)	-mm	76

LUBRICATION SYSTEM

Normal Operating Oil Pressure Range		
— minimum low idle	-kPa	207
—maximum rated speed	-kPa	345
Maximum Oil Temperature	-℃	121
Oil Capacity with OP 9006 Oil Pan:High-Low	-litre	14.2-12.3
Minimum Required Lube System Capacity - Sump plus Filters	-litre	16.4
Angularity of Standard Oil Pan: (Values stated are for intermittent operation only):		
— Front Down	- º	40
— Front Up	- º	40
— Side to Side	- º	40

FUEL SYSTEM

Type Injection System		BYC P7100
Maximum Restriction at Lift Pump	-kPa	13.6
Maximum Restriction at the Supply Side of the injector	-kPa	67.7
Total Drain Flow(constant for all loads)	-litre/hr	30

COOLING SYSTEM

Coolant Capacity-Engine Only	-litre	10
Maximum Coolant Friction Head Extemal to Engine		
-1800rpm	-kPa	35
-1500rpm	-kPa	28
Maximum Static Head of Coolant Above Engine Crank Centerline	-m	14
Standard Thermostat (Modulating) Range	-℃	82-95
Minmum Pressure Cap	-kPa	69
Maximum Top Tank Temperature for Standby/Prime Power	-℃	104/100

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty,Positive Engagement)	-volt	24V
Battery Charging System,Negative Ground	-ampere	40
Maximum Allowable Resistance of Cranking Circuit	-ohm	0.002
Minimum Recommended Battery Capacity		
-Cold Soal @ 10°F（-12℃）and Above	-0°F CCA	400

EMISSIONS

Gaseous Emissions per GB 20891-2007,Rated Speed@1500:

—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,Rated Speed@1800:

—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: **FR94438**

	STANDBY POWER		PRIME POWER	
Governed Engine Speed ... -rpm	1800	1500	1800	1500
Engine Idle Speed ... -rpm	750-850	750-850	750-850	750-850
Gross Engine Power Output ... -kW	165	155	150	140
Piston Speed ... -m/s	7.2	6	7.2	6
Friction Horsepower ... -kW	16.4	12.7	16.4	12.7
Engine Water Flow to Engine ... -litre/sec.	2.4	2.0	2.4	2
Intake Air Flow ... -litre/sec.	196	150	182	137
Exhaust Gas Flow ... -litre/sec.	438	357	398	321
Exhaust Gas Temperature ... -℃	458	507	445	495
Radiated Heat to Ambient ... -kW	21	19	19	17
Heat Rejection to Coolant ... -kW	62	58	58	57
Heat Rejection to Exhaust ... -kW	140	125	125	113

ALL DATA CERTIFIED WITHIN 5%

TBD = To Be Decided N/A = Not Applicable N.A. = Not Available

All data is subject to change without notice, sorry for inform.

DSEGenset®

DSE6110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

DSE**6120 MKII**

DSE**6110 MKII**

KEY FEATURES

- Large back-lit text display
- Multiple display languages
- Heated display option available
- DSENet® expansion compatible
- Data logging facility
- Fully configurable via PC using USB communication
- Front panel configuration
- Efficient power save mode
- 3 phase generator sensing
- 3 phase mains (utility) sensing (DSE6120 MKII only)
- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Accumulated power monitoring (kW h, kVA h, kVAr h)
- Generator/load current monitoring and protection
- Generator overload protection (kW)
- Breaker control via fascia buttons
- Fuel and start outputs, configurable when using CAN
- 4 configurable DC outputs
- 4 configurable analogue/digital inputs
- Support for 0 to10 V & 4 to 20 mA oil pressure sensors
- 6 configurable digital inputs
- Configurable staged loading outputs
- CAN, MPU and alternator speed sensing in one variant
- 3 engine maintenance alarms
- Engine speed protection
- Engine hours counter
- Engine pre-heat
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel pump control
- Real time clock
- Battery voltage monitoring
- Start on low battery voltage
- Configurable remote start input
- 1 alternative configuration
- Comprehensive warning, electrical trip or shutdown protection upon fault condition
- LCD and LED alarm indication
- Customisable information screens
- Configurable event log (100)
- Tier 4 ECO engine support including exhaust fluids & filters
- J1939-75 instrumentation output, configurable CAN instrumentation and alarms
- Start on low battery
- Enhanced alarm functionality
- Low load alarm

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE6120 MKII only)
- Increased input and output expansion capability via DSENet®
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored simultaneously which are clearly displayed on a large back-lit text display via multiple languages
- The module can be configured to suit a wide range of applications
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress

RELATED MATERIALS

TITLE	PART NO.
DSE6110/20 MKII Installation Instructions	053-173
DSE6110/20 MKII Operator Manual	057-226
DSE6110/20 MKII Configuration Suite PC Manual	057-224

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous

CRANKING DROPOUTS
Able to survive 0 V for 50 mS, providing supply was at least 10 V before dropout and supply recovers to 5 V. This is achieved without the need for internal batteries. LEDs and backlight will not be maintained during cranking.

MAXIMUM OPERATING CURRENT
100 mA at 12 V, 105 mA at 24 V

MAXIMUM STANDBY CURRENT
60 mA at 12 V, 55 mA at 24 V

MAXIMUM SLEEP CURRENT
40 mA at 12 V, 35 mA at 24 V

GENERATOR & MAINS (UTILITY)

VOLTAGE RANGE
15 V to 415 V AC (Ph to N)
26 V to 719 V AC (Ph to Ph)

FREQUENCY RANGE
3.5 Hz to 75 Hz

INPUTS

DIGITAL INPUTS A to F
Negative switching

ANALOGUE INPUT A
Configurable as:
Negative switching digital input
0 V to 10 V
4 mA to 20 mA
0 Ω to 240 Ω

ANALOGUE INPUTS B TO D
Configurable as:
Negative switching digital input
0 Ω to 480 Ω

OUTPUTS

OUTPUT A (FUEL)
10 A short term, 5 A continuous, at supply voltage

OUTPUT B (START)
10 A short term, 5 A continuous, at supply voltage

AUXILIARY OUTPUTS C, D, E & F
2 A DC at supply voltage

DIMENSIONS

OVERALL
216 mm x 158 mm x 43 mm
8.5'' x 6.2" x 1.5"

PANEL CUT-OUT
184 mm x 137 mm
7.2'' x 5.3"

MAXIMUM PANEL THICKNESS
8 mm
0.3"

STORAGE TEMPERATURE RANGE
-40 °C to +85 °C
-40 °F to +185 °F

OPERATING TEMPERATURE RANGE

NON HEATED DISPLAY VARIANT
-30°C to +70°C
-22 °F to +158 °F

HEATED DISPLAY VARIANT
-40 °C to +70 °C
-40 °F to +158 °F

OPTIONAL PARTS

PART	PART NUMBER
IP65 Gasket	020-521

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055-191/04/17 (3)

DSEGenset®

DSE6110/20 MKII

AUTO START & AUTO MAINS FAILURE CONTROL MODULES

The DSE6110 MKII Auto Start Control Module and the DSE6120 MKII Auto Mains (Utility) Failure Control Module are suitable for a wide variety of single gen-set applications.

Monitoring engine speed, oil pressure, coolant temperature, frequency, voltage, current, power and fuel level, the modules give comprehensive engine and alternator protection. This is indicated on a large back-lit LCD text display via an array of warning, electrical trip and shutdown alarms in multiple languages.

Electronic J1939 (CAN) and non-electronic MPU and alternator sensing engine support for diesel, gas and petrol engines all in one variant. With a number of flexible inputs, outputs and protections, the modules can be easily adapted to suit a wide range of applications.

Through USB Communication both modules can be configured using the DSE Configuration Suite PC Software or through the module's front panel editor.

Using the DSE Configuration Suite PC Software the controller is easy to use and configure which allows alteration of operating parameters, sequences, timers and alarms.

AVAILABLE VARIANTS

6110-03	Auto Start with real time clock
6120-03	Auto Mains Failure with real time clock

ENVIRONMENTAL TESTING STANDARDS

ELECTRO-MAGNETIC COMPATIBILITY
BS EN 61000-6-2
EMC Generic Immunity Standard for the Industrial Environment
BS EN 61000-6-4
EMC Generic Emission Standard for the Industrial Environment

ELECTRICAL SAFETY
BS EN 60950
Safety of Information Technology Equipment, including Electrical Business Equipment

TEMPERATURE
BS EN 60068-2-1
Ab/Ae Cold Test -30 ºC
BS EN 60068-2-2
Bb/Be Dry Heat +70 ºC

VIBRATION
BS EN 60068-2-6
Ten sweeps in each of three major axes
5 Hz to 8 Hz at +/-7.5 mm,
8 Hz to 500 Hz at 2 GN

HUMIDITY
BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 ºC at 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 ºC at 93% RH 48 Hours

SHOCK
BS EN 60068-2-27
Three shocks in each of three major axes
15 GN in 11 mS

DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
BS EN 60529
IP65 - Front of module when installed into the control panel with the optional sealing gasket.

COMPREHENSIVE FEATURE LIST TO SUIT A WIDE VARIETY OF GEN-SET APPLICATIONS