

100KW Cummins DIESEL GENERATOR



GENERAL INFORMATION & KEY FEATURES

- **Power:** 100kW Prime / 110kW Standby at 60 Hz
- **Engine:** Cummins 6BTAA5.9-G12
- **Cylinder:** 6-cylinder, in-line
- **Cooling:** Water-cooled
- **Displacement:** 5.9 Liter
- **Aspiration:** Turbocharged & Charge air cooled
- **Bore x Stroke:** 102x120 mm
- **Voltage:** 120 to 600V available, or any voltage can be customized
- **Phase:** Single phase or 3-phase available
- **Operating Speed:** 1800 rpm
- **Noise Level:** 69 db @ 7m
- **Enclosure Type:** Silent IP-65, soundproof and weatherproof customizable enclosure
- **Controller:** DSE GenSet 6110
- **Fuel Tank:** 90 or 225 gallons, extended fuel tank capacity options
- **Dimensions:** L*W*H - 118.1 x 43.3 x 67(in.)
- **Weight:** 3748 lbs.
- **Certifications:** Certified ISO:9001, ISO:17025, ISO:8258, EPA Tier 3, UL2200



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

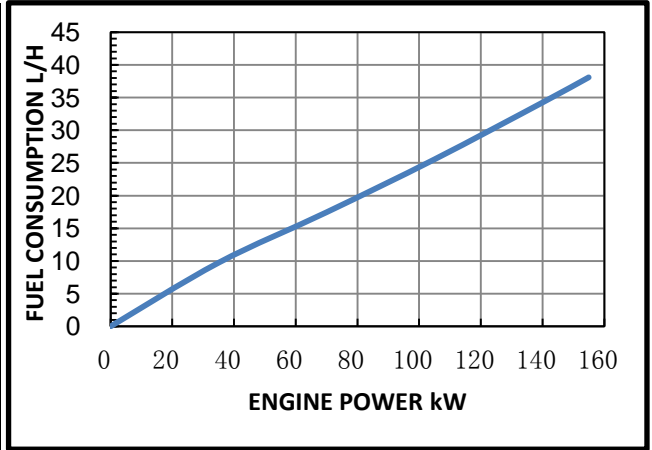
Compression Ratio: 17.3:1	Aspiration: Turbocharged & Charge Air Cooled
Bore: 102 mm	Displacement: 5.9 L
Stroke: 120 mm	No. of Cylinders: 6
Emission Certification:	Fuel System: BYC P7100/Electronic Governor
Governor Regulation: ≤5%	

All data is based on the engine operating with fuel system, water pump, and 14.85 in H₂O (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			

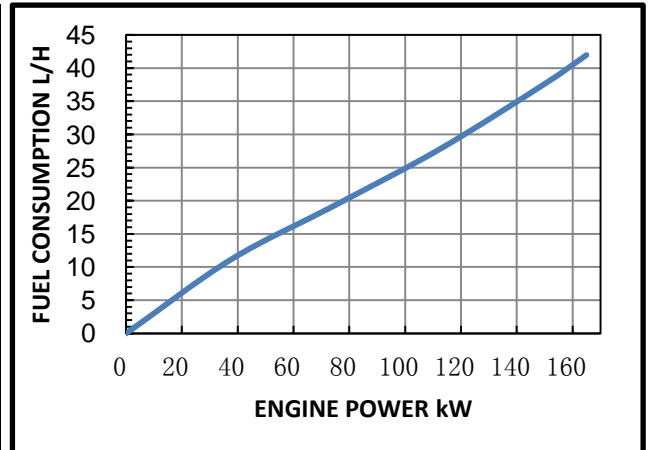
Engine Performance Data @ 1500RPM

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 Data @ 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.

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).....	-°C	25
Intake manifold temperature for Fan-ON.....	-°C	50
Intake manifold air temperature derate/alarm temperature.....	-°C	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.....	-°C	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	-°C	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.....	- °	40
— Front Up.....	- °	40
— Side to Side.....	- °	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 External to Engine		
-1800rpm.....	-kPa	35
-1500rpm.....	-kPa	28
Maximum Static Head of Coolant Above Engine Crank Centerline.....	-m	14
Standard Thermostat (Modulating) Range.....	-°C	82-95
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	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°C) and Above.....	-°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**

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 Exhaust.....	-kW

STANDBY POWER		PRIME POWER	
1800	1500	1800	1500
750-850	750-850	750-850	750-850
165	155	150	140
7.2	6	7.2	6
16.4	12.7	16.4	12.7
2.4	2.0	2.4	2
196	150	182	137
438	357	398	321
458	507	445	495
21	19	19	17
62	58	58	57
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.

UCI274F
WINDING 14

STAMFORD

CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.		
A.V.R.	MX341	MX321	
VOLTAGE REGULATION	± 1%	± 0.5 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	REFER TO SHORT CIRCUIT DECREMENT CURVES (page 6)		
CONTROL SYSTEM	SELF EXCITED		
A.V.R.	SX460	AS440	
VOLTAGE REGULATION	± 1.5 %	± 1.0 %	With 4% ENGINE GOVERNING
SUSTAINED SHORT CIRCUIT	DOES NOT SUSTAIN A SHORT CIRCUIT CURRENT		
INSULATION SYSTEM	CLASS H		
PROTECTION	IP23		
RATED POWER FACTOR	0.8		
STATOR WINDING	DOUBLE LAYER LAP		
WINDING PITCH	TWO THIRDS		
WINDING LEADS	12		
MAIN STATOR RESISTANCE	0.019 Ohms PER PHASE AT 22°C STAR CONNECTED		
MAIN ROTOR RESISTANCE	1.52 Ohms at 22°C		
EXCITER STATOR RESISTANCE	20 Ohms at 22°C		
EXCITER ROTOR RESISTANCE	0.091 Ohms PER PHASE AT 22°C		
R.F.I. 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%		
MAXIMUM OVERSPEED	2250 Rev/Min		
BEARING DRIVE END	BALL. 6315-2RS (ISO)		
BEARING NON-DRIVE END	BALL. 6310-2RS (ISO)		
	1 BEARING		2 BEARING
WEIGHT COMP. GENERATOR	530 kg		545 kg
WEIGHT WOUND STATOR	200 kg		200 kg
WEIGHT WOUND ROTOR	188.67 kg		177.71 kg
WR ² INERTIA	1.555 kgm ²		1.5044 kgm ²
SHIPPING WEIGHTS in a crate	563 kg		577 kg
PACKING CRATE SIZE	123 x 67 x 103(cm)		123 x 67 x 103(cm)
TELEPHONE INTERFERENCE	THF<2%		TIF<50
COOLING AIR	0.617 m ³ /sec 1308 cfm		
VOLTAGE STAR	380	400	416
kVA BASE RATING FOR REACTANCE VALUES	180	180	180
X _d DIR. AXIS SYNCHRONOUS	2.01	1.81	1.67
X' _d DIR. AXIS TRANSIENT	0.17	0.15	0.14
X'' _d DIR. AXIS SUBTRANSIENT	0.11	0.10	0.09
X _q QUAD. AXIS REACTANCE	1.21	1.09	1.01
X'' _q QUAD. AXIS SUBTRANSIENT	0.18	0.16	0.13
X _L LEAKAGE REACTANCE	0.07	0.06	0.06
X ₂ NEGATIVE SEQUENCE	0.13	0.12	0.11
X ₀ ZERO SEQUENCE	0.09	0.08	0.07
REACTANCES ARE SATURATED VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED			
T' _d TRANSIENT TIME CONST.		0.035s	
T'' _d SUB-TRANSTIME CONST.		0.011s	
T' _{do} O.C. FIELD TIME CONST.		0.9s	
T _a ARMATURE TIME CONST.		0.009s	
SHORT CIRCUIT RATIO		1/X _d	

UCI274F**STAMFORD****Winding 14 / 0.8 Power Factor****60Hz****RATINGS**

Class - Temp Rise	Cont. F - 105/40°C			Cont. H - 125/40°C			Standby - 150/40°C			Standby - 163/27°C		
Series Star (V)	380	400	416	380	400	416	380	400	416	380	400	416
Parallel StarStar (V)	190	200	208	190	200	208	190	200	208	190	200	208
Series Delta (V)	220	230	240	220	230	240	220	230	240	220	230	240
kVA	160.0	160.0	160.0	180.0	180.0	180.0	186.0	186.0	186.0	190.0	190.0	190.0
kW	128.0	128.0	128.0	144.0	144.0	144.0	148.8	148.8	148.8	152.0	152.0	152.0
Efficiency (%)	93.0	93.2	93.4	92.8	93.0	93.2	92.7	92.9	93.1	92.6	92.9	93.1
kW Input	137.6	137.3	137.1	155.2	154.8	154.5	160.6	160.1	159.8	164.1	163.6	163.3

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/>)

DSE6110/20 MKIII

AUTO START & AUTO MAINS (UTILITY) FAILURE CONTROL MODULES



DSE6110 MKIII



DSE6120 MKIII

KEY FEATURES

- 4-line back-lit LCD text display
- Multiple display languages
- Five-key menu navigation
- LCD alarm indication
- Customisable power-up text and screen images.
- DSENet® expansion compatibility
- Data logging facility
- Internal PLC editor
- Protections disable feature
- Fully configurable via PC using USB communications
- Front panel configuration with PIN protection
- Power save mode
- 3-phase generator sensing and protection
- 3-phase mains (utility) sensing and protection (DSE6120 MKIII only)
- Automatic load transfer control (DSE6120 MKIII only)
- Generator current and power monitoring (kW, kvar, kVA, pf)
- Mains (utility) current and power monitoring (kW, kvar, kVA, pf) (DSE6120 MKIII only)
- kW overload alarm
- Over current protection
- Breaker control via fascia buttons
- Fuel and start outputs configurable when using CAN
- 6 configurable DC outputs
- 4 configurable analogue/digital inputs
- Support for 0 V to 10 V & 4 mA to 20 mA sensors
- 8 configurable digital inputs
- CAN, MPU and alternator frequency speed sensing in one variant
- Real time clock
- Manual and automatic fuel pump control
- Engine pre-heat and post-heat functions
- Engine run-time scheduler
- Engine idle control for starting & stopping
- Fuel level alarms
- 3 configurable maintenance alarms
- Compatible with a wide range of CAN engines, including Tier 4 engine support
- Uses DSE Configuration Suite PC Software for simplified configuration
- Licence-free PC software
- IP65 rating (with optional gasket) offers increased resistance to water ingress
- Configurable CAN read & transmitted information.
- 1 alternative configuration.

KEY BENEFITS

- Automatically transfers between mains (utility) and generator (DSE6120 MKIII only) for convenience.
- Hours counter provides accurate information for monitoring and maintenance periods
- User-friendly set-up and button layout for ease of use
- Multiple parameters are monitored & displayed simultaneously for full visibility
- The module can be configured to suit a wide range of applications for user flexibility
- PLC editor allows user configurable functions to meet user specific application requirements.

SPECIFICATIONS

DC SUPPLY

CONTINUOUS VOLTAGE RATING
8 V to 35 V Continuous
5 V for up to 1 minute

CRANKING DROPOUTS

Able to survive 0 V for 100 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

260 mA at 12 V, 150 mA at 24 V

MAXIMUM STANDBY CURRENT

145 mA at 12 V, 85 mA at 24 V

CHARGE FAIL/EXCITATION RANGE

0 V to 35 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

MAGNETIC PICKUP

VOLTAGE RANGE
+/- 0.5 V to 70 V

FREQUENCY RANGE

10,000 Hz (max)

INPUTS

DIGITAL INPUTS A TO H
Negative switching

ANALOGUE INPUTS A & D

Configurable as:
Negative switching digital input
0 V to 10 V sensor
4 mA to 20 mA sensor
Resistive sensor

ANALOGUE INPUTS B & C

Configurable as:
Negative switching digital input
Resistive sensor

OUTPUTS

OUTPUT A & B (FUEL & START)
10 A DC at supply voltage

AUXILIARY OUTPUTS C, D, E, F, G & H

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

RELATED MATERIALS

TITLE	PART NO.
DSE6110 MKIII & DSE6120 MKIII Installation Instructions	053-240
DSE6110 MKIII & DSE6120 MKIII Operator Manual	057-289
DSE6110 MKIII & DSE6120 MKIII Configuration Suite PC Manual	057-290

DEEP SEA ELECTRONICS

Highfield House, Hunmanby Industrial Estate, Hunmanby YO14 0PH
TELEPHONE +44 (0) 1723 890099 **FACSIMILE** +44 (0) 1723 893303
EMAIL sales@deepseapl.com **WEBSITE** www.deepseapl.com

DEEP SEA ELECTRONICS INC USA

3230 Williams Avenue, Rockford, IL 61101-2668 USA
TELEPHONE +1 (815) 316 8706 **FACSIMILE** +1 (815) 316 8708
EMAIL sales@deepseausa.com **WEBSITE** www.deepseausa.com

DSE6110/20 MKIII

AUTO START & AUTO MAINS (UTILITY) FAILURE CONTROL MODULES

The DSE6110 MKIII is an Auto Start Control Module and the DSE6120 MKIII is an Auto Mains (Utility) Failure Control Module suitable for a wide variety of single, diesel or gas, gen-set applications.

Monitoring an extensive number of engine parameters, the modules will display warnings, shutdown and engine status information on the back-lit LCD screen, illuminated LEDs and remote PC.

The DSE6120 MKIII will also monitor the mains (utility) supply. The modules include USB connection and dedicated DSENet® terminals for system expansion.

Both modules are compatible with electronic (CAN) and non-electronic (magnetic pick-up/alternator sensing) engines and offer an extensive number of flexible inputs, outputs and extensive engine protections so the system can be easily adapted to meet the most demanding industry requirements.

The extensive list of features includes enhanced event and performance monitoring, remote communications & PLC functionality.

The modules can be easily configured using the DSE Configuration Suite PC software. Selected front panel editing is also available.

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 °C
BS EN 60068-2-2
Bb/Be Dry Heat +70 °C

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 °C
at 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C
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

