

MID FLORIDA DIESEL



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Bill of Material For Florida Sheriff Association Item #108 - 125KW GENERATOR PACKAGE

Blue Star Power Systems MODEL: (Qty. - 1) JD125-02

GENERATOR: 125 kW, 156 kVA
VOLTAGE: 480 volt Three-Phase
ENGINE: John Deere 4045HF285, 60 Hz Diesel, 1800 RPM

Standard Features Included:

Microprocessor based, digital readout control system.
Engine vitals monitored by LCD display: Oil pressure, Running time, Engine temperature, Safety shutdowns (HWT, OC, OS, OP, LWL), Battery voltage, Generator AC voltage, AC amperage, Frequency.
Additional Features: Oil drain extension, Vibration isolation pads, Water heater, Fuel solenoid valve.

Selected Model Features Included:

Isochronous Governor + / - .25%
UL2200
EPA Tier II Certified
130 Degree Temperature Rise

CONTROL PANEL:

DGC-2020 Control Panel (Expanded)

The expanded t Digital Genset Controller (DGC-2020) utilizes microprocessor based technology to provide a versatile system for genset control, protection, monitoring and event logging. The DGC-2020 expanded model with standard LCD heater includes touch screen password protected programming capabilities and a standard USB communications port for re-programming and simple loading of software upgrades. This version is equipped with generator metering, engine monitoring, genset control, engine protection, generator protection (27, 59, 81O, 81U), BESTCOMSPlus PC software, automatic transfer switch control, suitable for use on rental gensets with Hi/Lo line sensing or Single or three phase sensing override, SAE J1939 Engine ECU communications, multilingual capability, remote communications to the KRDP-110 Remote Annunciator, 16 programmable contact inputs, 15 contact outputs (3- 30Adc and 12 programmable 2 Adc), UL recognized, CSA certified, CE approved, HALT (Highly Accelerated Life Tests) tested, IP 54 Front Panel rating with integrated gasket, NFPA110 Level Compatible.

Included Accessories

ENCLOSURE Weather Proof Enclosure-- Level II

Weather Proof Enclosure- Made with 14 Gauge Metal with louvered rear opening for air intake and punched side air openings for air intake and silencer is mounted inside enclosure with exhaust exiting through front sound compartment. Pitched roof for increased structural integrity and improved watershed. Lockable handles keyed alike with hinged doors

Accessories:

Sound Attenuation Foam 1.5"
150 mph Wind Load Rated

COOLING SYSTEM:

Unit Mounted Radiator

Accessories:

Low Coolant Level Shutdown

CIRCUIT BREAKERS:

200A BREAKER – 600v Thermal Magnetic 80% rated
Mounted and Wired in a NEMA 1 Enclosure (Qty: (1 per gen)
Circuit Breaker - UL listed and CSA certified.

Accessories:**BATTERY:**

Lead Acid Battery

BLOCK HEATER:

Standard @ 20 F w/isolation valves
120v 1 phase

VIBRATION ISOLATION:

Vibration Pads Isolator

BATTERY CHARGER:

(12 Volt, 6 Amp)

Included Accessories:**SUB BASE TANK:**

Sub Base Fuel Tank Steel (with Stub Up) (250 Gallons Capacity-24hrs run time)

Accessories:

UL 142 Approved
Double Wall
Emergency Pressure Relief Vent Cap Set (1/2 PSI) - 2" (1)
1.5" Normal Vent Cap

MUFFLER:

Critical Grade Muffler –

Accessories:

Rain Cap

MISCELLANEOUS:

Certified Factory Test
Manual – One (1) Instruction Manuals
2 Yr/2000 Hr Standby Limited Warranty
Test Acceptance Run by Factory Trained Representative (Start Up)

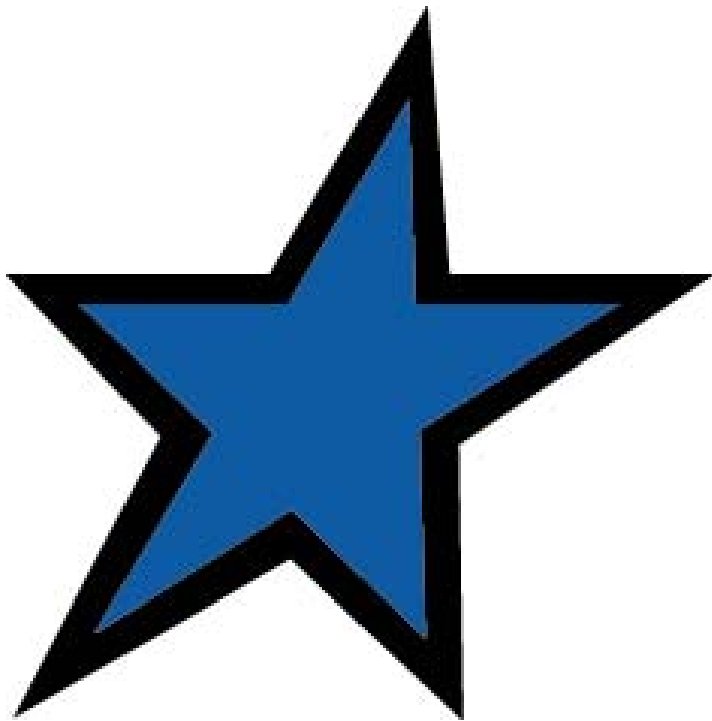
BLUE ST★R

Power Systems Inc.

Engineering Submittal

8/25/2020

Project Title	125KW Standby
Quote Number:	0023453-0
Model:	JD125-02



Mid Florida Diesel
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- Industrial Generators
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- DGC-2020 Gen-Set Controller
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- Radiators
- MC Series Circuit Breakers
- TPS Series Block Heaters
- Duralite Air Cleaner Single Stage
- CPJ Series Critical Grade Silencers
- Industrial Gen-Set Batteries
- BC1206A Series Battery Chargers
- Sub-Base Fuel Tanks
- 2yr 2000hr limited warranty

BLUE STAR

Power Systems Inc.

Quote Date: 125KW Standby
Quote Number: Mid Florida Diesel
Project Title:
Prepared for

Unit Model	JD125-02	Standby / Prime	Emergency Stationary Standby
kWe Rating	125 kWe	UL 2200 Listed	Yes
Fuel	Diesel	CSA Approved	Yes
EPA	Tier 3	Paint Color	White

Engine Model: John Deere 4045HF285 125kW Standby Power Rating at 1800 RPM
Governor - Electronic Isochronous

Voltage: 240/120V 3 Phase 60 Hz 0.8 PF

Gen Model: Marathon 363CSL1607 12 Lead Wired 240V 3 Phase Delta 130°C Rise Over 27°C Ambient

Voltage Regulator: Marathon SE350 Automatic Voltage Regulator

Control Panel: Blue Star DGC-2020 Microprocessor Based Gen-Set Controller
Mounted Facing Left from Generator End (Unless Specified Otherwise)
Standard Features: Low Oil Pressure, High Coolant Temp, Overspeed, Overcrank Shutdowns
Emergency Stop Pushbutton, Audible Alarm Buzzer with Silencing Switch
Optional Features Include: Generator Protection (Undervoltage, Overvoltage, Underfrequency, Overfrequency, Overcurrent)

Unit Color: White

Enclosure: Level 2 (Weather Proof Enclosure with Foam) Powder Coated 14 Gauge Steel
Rugged and Durable 150 MPH Wind Rated Enclosure
Pitched Roof for Increased Structural Integrity and Improved Watershed
Punched Intake with Baffle and Punched Exhaust Openings
Keyed Alike Lockable Doors with Draw Down Latches and Stainless Steel Component Hinges
Additional 1.5" Thick Polydamp Type D Acoustical Foam (PAF)
Formed Steel Base with Mounting and Lifting Holes
Includes Vibration Mounts to Isolate Unit from Base Rail

Sound Attenuation Foam: Sound Attenuation Installed in Enclosure

Cooling: Unit Mounted Radiator (50°C Ambient)

Oil Drain Extension: Plumbed to Bulkhead Fitting in Base

Mainline Breaker: 400 Amp 3 Pole 240 Volt Breaker Mounted & Wired in a NEMA 1 Enclosure

Jacket Water Heater: Engine Block Heater 1500W 120VAC Rated for -20°F
Heater Installed with Isolation Valves and Wired to Terminal

Air Cleaner: Dry Single Stage

Silencer: Critical Grade Compact (CPJ Series) Silencer Mounted to Engine

Battery: 12 Volt System with Rack and Cables

Battery Charger: 12 Volt 6 Amp Mounted and Wired to Terminal

Fuel Tank: 24 Hour / 250 Gallon UL 142 Listed Sub-Base Fuel Tank with Stub-up Area
Double Wall Construction with Secondary Containment Standard
Includes: Supply & Return Connections, Fuel Level Gauge, Fuel Leak Switch and Fill & Vent Plumbing

Factory Test:	Standard Commercial Testing Includes: Verification of Alarm Shutdowns, Voltage Settings, Block Loading to Rated kWe and PF
Owner's Manual:	Print Copy (Qty 1) Standard
Warranty:	2 Year / 2000 Hour Limited

Notes:

BLUE STAR

Power Systems Inc.

Diesel Product Line

208-600 Volt

JD125-02

60 Hz / 1800 RPM

125 kWe / 110 kWe

Standby / Prime

Ratings

	240V	208V	240V	480V	600V
Phase	1	3	3	3	3
PF	1.0	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Generator Model	431CSL6204	363CSL1607	363CSL1607	363CSL1607	363PSL1658
Connection	12 LEAD ZIG-ZAG	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE
Standby					
kWe	125	125	125	125	125
AMPS	521	434	376	188	151
Temp Rise	130°C / 27°C	130°C / 27°C	130°C / 27°C	130°C / 27°C	130°C / 27°C
Prime [Only Available For Mobile Applications]					
kWe	110	110	110	110	110
AMPS	458	382	331	166	132
Temp Rise	105°C / 40°C	105°C / 40°C	105°C / 40°C	105°C / 40°C	105°C / 40°C

Standard Equipment

Engine <ul style="list-style-type: none"> ▶ Radiator Cooled Unit Mounted (50°C) ▶ Blower Fan & Fan Drive ▶ Starter & Alternator ▶ Oil Pump & Filter ▶ Oil Drain Extension w/Valve ▶ Governor - Electronic Isochronous ▶ 12V Battery System & Cables ▶ Air Cleaner (Dry Single Stage) ▶ Flexible Fuel Connector ▶ EPA Certified Tier 3 	Generator <ul style="list-style-type: none"> ▶ Brushless Single Bearing ▶ Automatic Voltage Regulator ▶ ± 1% Voltage Regulation ▶ 4 Pole, Rotating Field ▶ 130°C Standby Temperature Rise ▶ 105°C Prime Temperature Rise ▶ 100% of Rated Load - One Step ▶ 5% Maximum Harmonic Content ▶ NEMA MG 1, IEEE and ANSI Standards Compliance for Temperature Rise 	Additional <ul style="list-style-type: none"> ▶ Microprocessor Based Digital Control ▶ Interface Connection Box ▶ Control Panel Mounted in NEMA 12 Enclosure ▶ Base - Formed Steel ▶ Main Line Circuit Breaker Mounted & Wired ▶ Critical Grade Silencer Mounted ▶ Battery Charger 12V 6 Amp ▶ Jacket Water Heater -20°F 1500W 120V w/Isolation Valves ▶ Vibration Isolation Mounts ▶ Radiator Duct Flange (OPU Only) ▶ Single Source Supplier ▶ 2YR / 2000HR Standby Warranty ▶ 1YR / 1500HR Prime Warranty ▶ Standard Colors - White / Tan / Gray
Listing Certifications <ul style="list-style-type: none"> ▶ UL 2200 Listed ▶ cUL Listed ▶ CSA Certified ▶ Seismic Certified to IBC 2012 		

Diesel Product Line

125 kWe / 110 kWe



Application Data

Engine			
Manufacturer:	John Deere	Displacement - Cu. In. (lit):	275 (4.50)
Model:	4045HF285	Bore - in. (cm) x Stroke - in. (cm):	4.19 (10.6) x 5.00 (12.7)
Type:	4-Cycle	Compression Ratio:	19.0:1
Aspiration:	Turbo Charged, CAC	Rated RPM:	1800
Cylinder Arrangement:	4 Cylinder Inline	Max HP Stby (kWm):	197 (147)

Exhaust System	Standby	Prime
Gas Temp. (Stack): °F (°C)	1,076 (580)	1,062 (572)
Gas Volume at Stack Temp: CFM (m³/min)	953 (27.0)	869 (24.6)
Maximum Allowable Exhaust Restriction: in. H ₂ O (kPa)	30.0 (7.50)	30.0 (7.50)

Cooling System		
Ambient Capacity of Radiator: °F (°C)	122 (50.0)	122 (50.0)
Maximum Allowable Static Pressure on Rad. Exhaust: in. H ₂ O (kPa)	0.50 (0.12)	0.50 (0.12)
Water Pump Flow Rate: GPM (lit/min)	48.0 (180)	48.0 (180)
Heat Rejection to Coolant: BTUM (kW)	4,098 (72.0)	3,643 (64.0)
Heat Rejection to CAC: BTUM (kW)	1,508 (26.5)	1,295 (22.8)
Heat Radiated to Ambient: BTUM (kW)	1,457 (25.5)	1,252 (21.9)

Air Requirements		
Aspirating: CFM (m³/min)	341 (9.65)	311 (8.80)
Air Flow Required for Rad. Cooled Unit: CFM (m³/min)	7,845 (222)	7,845 (222)
Air Flow Required for Heat Exchanger/Rem. Rad. CFM (m³/min)	Consult Factory For Remote Cooled Applications	

Fuel Consumption		
At 100% of Power Rating: gal/hr (lit/hr)	9.86 (37.3)	9.15 (34.7)
At 75% of Power Rating: gal/hr (lit/hr)	7.63 (28.9)	7.08 (26.8)
At 50% of Power Rating: gal/hr (lit/hr)	5.56 (21.1)	5.13 (19.4)

Fluids Capacity		
Total Oil System: gal (lit)	3.88 (14.7)	3.88 (14.7)
Engine Jacket Water Capacity: gal (lit)	2.25 (8.50)	2.25 (8.50)
System Coolant Capacity: gal (lit)	5.40 (20.4)	5.40 (20.4)

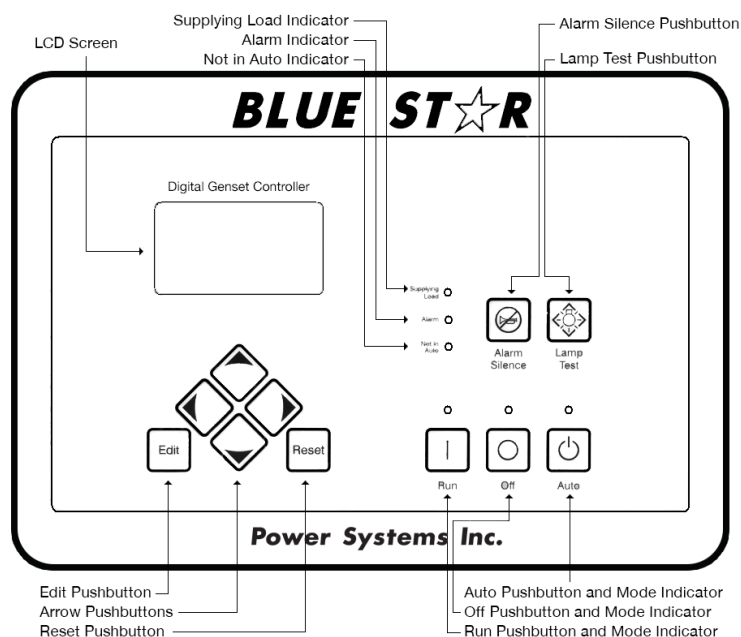
Deration Factors

Rated Power is available up to 7,500 ft (2,286 m) standby and 10,000 ft (3,048 m) prime at ambient temperatures to 122°F (50°C). Consult factory for site conditions above these parameters.

DGC-2020 Control Panel

Standard Features

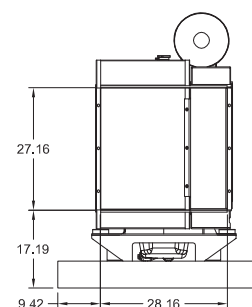
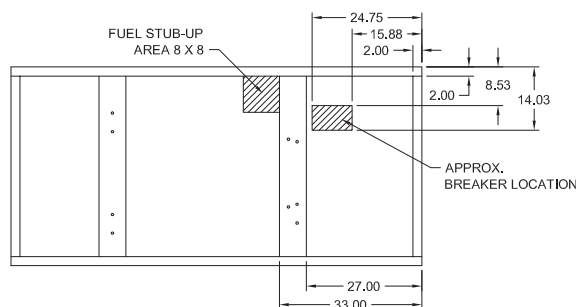
- ▶ Digital Metering
- ▶ Engine Parameters
- ▶ Generator Protection Functions
- ▶ Engine Protection
- ▶ CAN Bus ECU Communications
- ▶ Windows-Based Software
- ▶ Multilingual Capability
- ▶ Remote Communications to RDP-110 Remote Annunciator
- ▶ 16 Programmable Contact Inputs
- ▶ Up to 15 Contact Outputs (7 standard)
- ▶ UL Recognized, CSA Certified, CE Approved
- ▶ Event Recording
- ▶ IP 54 Front Panel Rating with Integrated Gasket
- ▶ NFPA 110 Level 1 Compatible



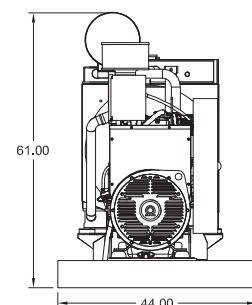
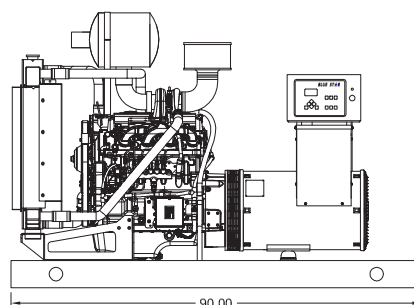
Weights / Dimensions / Sound Data

	L x W x H	Weight lbs
OPU	90 x 44 x 61 in	2,675
Level 1	102 x 44 x 66 in	3,300
Level 2	102 x 44 x 66 in	3,350
Level 3	132 x 44 x 66 in	3,550

Please allow 6-12 inches for height of exhaust stack.



	No Load	Full Load
OPU	82 dBA	85 dBA
Level 1	78 dBA	81 dBA
Level 2	75 dBA	77 dBA
Level 3	68 dBA	71 dBA



Drawings based on standard open power 480 volt standby generator. Lengths may vary with other voltages. Subject to change without notice.
Sound data as measured at 23 feet (7 meters) in accordance with ISO 8528-10 at standby rating.

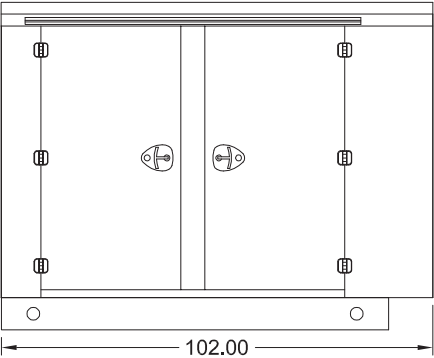
Diesel Product Line

125 kW_e / 110 kW_e

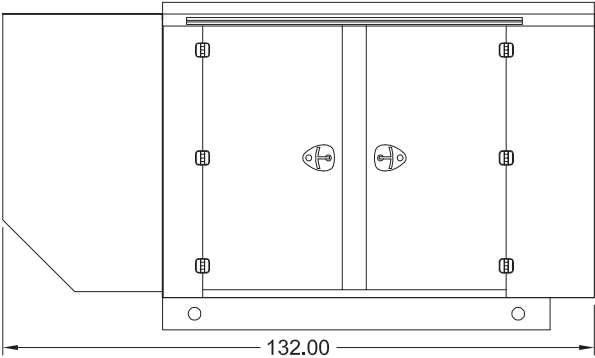


Enclosures

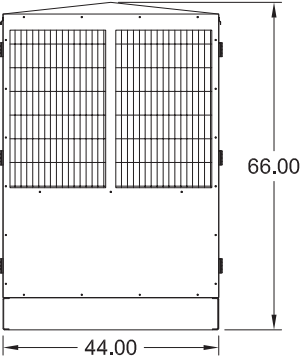
Level 1 & 2 | Side View (Weather Proof)



Level 3 | Side View (Sound Attenuated)



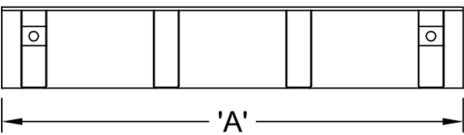
Level 1, 2 & 3 | Intake View



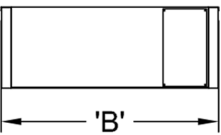
All enclosures are 150 MPH Wind Rated.
Level 2 & 3 enclosures include sound attenuation foam.
Level 3 enclosure includes frontal sound & exhaust hood.
*Enclosure height does not include exhaust stack.

Double Wall UL 142 Listed Fuel Tanks

Side View



Rear View



	24 Hour 250 Gallon	48 Hour 500 Gallon	72 Hour 750 Gallon
A	90.00	120.00	174.00
B	44.00	44.00	44.00
C	28.00	36.00	36.00

All specification sheet dimensions are represented in inches.
All enclosures and fuel tanks are based on the standard standby unit configuration. Any deviation can change dimensions.
Materials and specifications subject to change without notice.



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JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: Gross Power
Application: Generator (60 Hz)
Target: 125 kWe Standby Market

PowerTech E™ 4.5L Engine

Model: **4045HF285**

179 hp (134 kW) Prime
197 hp (147 kW) Standby

[See Option Code Tables]

Nominal Engine Power @ 1800 RPM

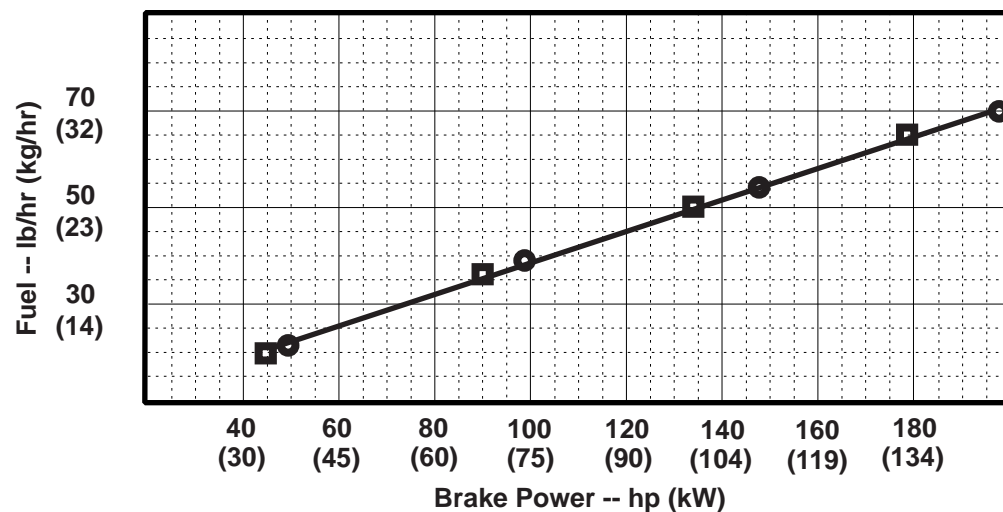
Prime		Standby	
HP	kW	HP	kW
179	134	197	147

Generator Efficiency %	Fan Power (6% of Standby)		Power Factor	Prime Rating ²		Standby Rating ^{1,2}		ISO 8528 G2 Block Load Capability
	hp	kW		kWe	kVA	kWe	kVA	
88-92	8.7	6.5	0.8	112-117	140-146	124-129	155-161	___%

Note 1: Based on nominal engine power.
Note 2: kWe / kVA rating assumes 90% efficiency. "Generator Efficiency %" will vary.

■ - PRIME

● - STANDBY



STANDARD CONDITIONS

Air Intake Restriction 12 in.H₂O (3 kPa)
Exhaust Back Pressure 30 in.H₂O (7.5 kPa)

Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:

77 °F (25 °C) air inlet temperature
29.31 in.Hg (99 kPa) barometer
104 °F (40 °C) fuel inlet temperature
0.853 fuel specific gravity @ 60 °F (15.5 °C)

Conversion factors:

Power: kW = hp x 0.746
Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
Torque: N•m = lb-ft x 1.356

All values are from currently available data and are subject to change without notice.

Notes:

All OEM Gen Set Engine Applications must be pre-screened for torsional vibration compatibility with the respective alternator end hardware.

OEM Engine Application Engineering will perform this computer-based analysis work upon request.

Tier-3 Emission Certifications:

Certified by:

CARB; EPA

Ref: Engine Emission Label

*Advance
Information*

* Revised Data

Curve 4045HF2851800197 Sheet 1 of 2
May 2008

Engine Installation Criteria

General Data

Model	4045HF285
Number of Cylinders	4
Bore and Stroke--in. (mm).....	4.19 x 5.00 (106 x 127)
Displacement--in. ³ (L)	275 (4.5)
Compression Ratio	19.0:1
Valves per Cylinder--Intake/Exhaust	1 / 1
Firing Order	1-3-4-2
Combustion System	Unit Injection
Engine Type	In-line, 4-Cycle
Aspiration	Turbocharged
Charge Air Cooling System	Air-to-Air
Engine Crankcase Vent System	Open

Physical Data

Length--in. (mm)	33.9 (860)
Width--in. (mm)	24.1 (612)
Height--in. (mm)	40.9 (1039)
Weight, with oil--lb (kg).....	1083 (491)
(Includes flywheel hsg., flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block (X-axis)--in. (mm) ...	9.8 (249)
Right of Crankshaft (Y-axis)--in. (mm)	2.17 (55)
Above Crankshaft (Z-axis)--in. (mm)	5.7 (145)
Max. Allow. Static Bending Moment at Rear	
Face of Flywhl Hsg w/ 5-G Load--lb-ft (N•m) ..	600 (814)
Thrust Bearing Load Limit --lb (N) <u>Forward</u> <u>Rearward</u>	
Intermittent.....	899 (4000) 450 (2000)
Continuous	495 (2200) 225 (1000)
Max. Front of Crank. Torsional Vibration--DDA.....	0.25

Electrical System

12 Volt 24 Volt

Min. Battery Capacity (CCA)--amp.....	800	570
Max. Allow. Start. Circ't Resist.--Ohm ..	0.0012	0.002
Starter Rolling Current:		
At 32 °F (0 °C)--amp	920	600
At -22 °F (-30 °C)--amp	1300	700
Min. Volts at ECU while Cranking--volts.....	6	10
Max. ECU Temperature--°F (°C)	221 (105)	
Max. Harness Temperature--°F (°C)	248 (120)	
Maximum Voltage From Engine Crankshaft/		
Generator Shaft to Ground--VAC	0.15	0.15

Air System

Prime Standby

Max. Allowable Temp Rise--Ambient Air to		
Engine Inlet--°F (°C).....	15	(8)
Maximum Air Intake Restriction		
Dirty Air Cleaner--in.H ₂ O (kPa).....	25	(6.25)
Clean Air Cleaner--in.H ₂ O (kPa)	15	(3.75)
Engine Air Flow--ft ³ /min (m ³ /min)	311(8.8)	341(9.65)
Air Cleaner Efficiency--%	99.9	

Charge Air Cooling System

Prime Standby

Air/Air Exchanger Heat Rejection--		
BTU/min (kW)	1295(22.8)	1508 (26.5)
Compress. Dischrg. Temp.(Rated)		
@ 77 °F (25°C) Amb. Air--°F (°C) .	334(168)	369(187)
Compress. Dischrg. Temp.(Max.)		
@ 47°C amb. and		
80 kPa bar.--°F (°C)	NA (NA)	NA (NA)
Press. Drop, thru CAC--in.H ₂ O (kPa)		
Max.	52	(13)
Min.	None	
Intake Manifold Pressure--psi (kPa)	21(147)	25(172)
CAC Out Temp @ 77°F (25°C) Amb.--°F (°C)		
Max.	113	(45)
Min.	104	(40)
CAC Out Temp @ any Ambient--°F (°C)		
Max.	190	(88)

Cooling System

Prime Standby

Engine Heat Reject.--BTU/min (kW)....	3643(64)	4098(72)
Coolant Flow--gal/min (L/min).....	48(180)	
Thermostat Start to Open--°F (°C)	180 (82)	
Thermostat Fully Open--°F (°C).....	203 (95)	
Engine Coolant Capacity--qt (L)	9 (8.5)	
Min. Pressure Cap--psi (kPa)	14.5 (100)	
Max. Top Tank Temp--°F (°C)	230 (110)	
Min. Coolant Fill Rate--gal/min (L/min)	3 (11)	
Min. Air-to-Boil Temperature--°F (°C)	117 (47)	
Min. Pump Inlet Pressure--psi (kPa).....	4.4 (30)	

Exhaust System

Prime Standby

Exhaust Flow--ft ³ /min (m ³ /min).....	869 (24.6)	953(27.0)
Exhaust Temperature--°F (°C)	1062(572)	1076 (580)
Max. Exhaust Restriction----in. H ₂ O (kPa)	30 (7.5)	
Min. Exhaust Restriction----in. H ₂ O (kPa)	None	
Max. Bend. Moment, Turbo Out.--lb-ft (N•m)	5.2 (7.0)	
Max. Shear on Turbo Outlet--lb (kg)	24 (11)	

Fuel System

Prime Standby

ECU Description	L16 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow--lb/hr (kg/hr).....	152 (68.9)	169 (76.6)
Fuel Consumption--lb/hr (kg/hr).....	63 (29.0)	70 (31.9)
Max. Fuel Inlet Temp.--°F (°C).....	176 (80)	
Fuel Temp. Rise, Inlt to Retr--°F (°C)84.6(47)	88.2(49)	
Max. Fuel Inlet Restriction--in. H ₂ O (kPa)	80 (20)	
Max. Fuel Inlet Pressure--in. H ₂ O (kPa)	NA (NA)	
Max. Fuel Return Pressure--in. H ₂ O (kPa)	80 (20)	

Lubrication System

Prime Standby

Oil Press. at Rated Speed--psi (kPa).....	46 (320)	
Min. Oil Pressure--psi (kPa).....	15 (105)	
Max. Oil Carryover in Blow-by--lb/hr (g/hr)	0.002 (1.0)	
Max. Airflow in Blow-by--gal/min (l/min).....	26 (100)	
Max. Crankcase Pressure--in. H ₂ O (kPa).....	2 (0.5)	

Performance Data

Prime Standby

Rated Power--hp (kW)	179 (134)	197 (147)
Rated Speed--rpm	1800	1800
Low Idle Speed--rpm	1150	1150
Rated Torque--lb-ft (N•m).....	961 (709)	1057 (780)
BMEP--psi (kPa)	287 (1980)	316 (2178)
Friction Power		
@ Rated Speed--hp (kW)	17 (13)	
Altitude Capability--ft (m)	10,000(3050)	7500(2286)
Ratio--Air : Fuel.....	22 : 1	21 : 1
Smoke @ Rated Speed--Bosch No.	0.44	1.25
Noise--dB(A) @ 1 m	NA	NA

Fuel Consumption -- lb/hr (kg/h)

Prime Standby

25 % Power	19.8 (9.0)	21.4 (9.7)
50 % Power	36.4 (16.5)	39.5 (17.9)
75 % Power	50.3 (22.8)	54.2 (24.6)
100 % Power	65.0 (29.5)	70.0 (31.9)

Advance Information

All values at rated speed and power with standard options unless otherwise noted.

* Revised Data

Curve 4045HF2851800197..... Sheet 2 of 2
May 2008

Blue Star Power Systems, Inc. utilizes the highest quality generators available. Our industrial generators provide consistent performance, quality design, and great durability required for long life and versatility. Generators used by Blue Star Power Systems, Inc. are UL and CSA Listed (unless specified otherwise), which guarantees that each one meets the rigorous demands of industrial power generation and will provide safe and effective service for the life of the generator. Blue Star Power Systems, Inc. generators range from 20 kWe through 2000 kWe.



Standard Features

► **Enhanced Ventilation**

Created by a high-efficiency fan that optimizes internal airflow patterns, maximizes heat transfer, and minimizes hot spot differentials for extended winding life.

► **Fully Guarded**

For operator safety and generator protection. No rotating or electrically energized parts are exposed. All openings are covered by louvers or screens.

► **Large Conduit Box**

Provides ample space for easy connections and allows load line access from all sides, top, or bottom.

► **Design Specs and Agency Approvals**

All Blue Star Power Systems, Inc. generators are UL and CSA Listed (unless specified otherwise) and meet NEMA MG1-22, BS5000, CSA C22.2, IEC 34-1 and VDE 0530 requirements.

► **Class H Insulation System**

Utilizes an unsaturated polyester varnish for optimal insulation life and superior moisture protection.

► **Optimized Windings**

Provide low reactances and exceptional motor starting capability. The stator windings utilize a 2/3 pitch to minimize harmonic distortion and facilitate parallel operation.

► **Permanent Magnet Generator (optional)**

Ensures 300% short circuit current during fault conditions and provides the regulator with input power isolated from load distortion.

► **Shielded Heavy-Duty Bearing**

Resists contamination and gives a minimum B-10 life of 40,000 hours.

► **Automatic Voltage Regulator**

Provides accurate 1% regulation, under-speed protection, stability adjustment to optimize transient performance, and EMI filtering to commercial standards. Fully encapsulated for rugged durability in virtually any environment.



**MARATHON ELECTRIC
SYNCHRONOUS AC GENERATOR
TYPICAL SUBMITTAL DATA**

Basic Model 363CSL1607

Date: 3/28/13

Kilowatt ratings at		1800 RPM		60 Hertz			12 Leads		
kW (kVA)		3 Phase		0.8 Power Factor			Dripproof or Open Enclosure		
Voltage*	Class B	Class F					Class H		
	80° C ① Continuous	90° C ① Lloyds	95° C ① ABS	105° C † British Standard	105° C ① Continuous	130° C ① Standby	125° C † British Standard	125° C ① Continuous	150° C ① Standby
240/480	110 (138)	115 (144)	115 (144)	125 (156)	125 (156)	135 (169)	135 (169)	135 (169)	150 (188)
230/460	110 (138)	115 (144)	115 (144)	125 (156)	125 (156)	135 (169)	135 (169)	135 (169)	150 (188)
220/440	105 (131)	110 (138)	110 (138)	115 (144)	115 (144)	130 (163)	130 (163)	130 (163)	140 (175)
208/416	100 (125)	105 (131)	105 (131)	110 (138)	110 (138)	125 (156)	125 (156)	125 (156)	135 (169)
190/380	90 (113)	95 (118)	95 (118)	100 (125)	100 (125)	115 (144)	115 (144)	115 (144)	125 (156)

① Rise by resistance method, Mil-Std-705, Method 680.1b.

† Rating per BS 5000.

Submittal Data: 480 Volts, 169 kVA, 1800 RPM, 60 Hz, 3 Phase					
Mil-Std-705B			Mil-Std-705B		
Method	Description	Value	Method	Description	Value
301.1b	Insulation Resistance	> 1.5 Meg	505.3b	Overspeed	2250 RPM
302.1a	High Potential Test		507.1c	Phase Sequence CCW-ODE	ABC
	Main Stator	2000 Volts	601.4a	L-L Harmonic Maximum - Total	3.5%
	Main Rotor	1500 Volts		(Distortion Factor)	
	Exciter Stator	1500 Volts	601.4a	L-L Harmonic Maximum - Single	2.5%
	Exciter Rotor	1500 Volts	601.1c	Deviation Factor	7.0%
401.1a	Stator Resistance, Line to Line		---	TIF (1960 Weightings)	<50
	High Wye Connection	0.0692 Ohms	Additional Prototype Mil-Std Methods are Available on Request.		
	Rotor Resistance	1.365 Ohms			
	Exciter Stator	23.5 Ohms			
	Exciter Rotor	0.12 Ohms			
410.1a	No Load Exciter Field Amps at 480 Volts Line to Line	0.52 A DC	--	Generator Frame	360
420.1a	Short Circuit Ratio	0.485	--	Type	Ext. Voltage Regulated, Brushless
421.1a	Xd Synchronous Reactance	2.41 pu	--	Insulation	Class H
422.1a	X2 Negative Sequence Reactance	0.108 pu	--	Coupling - Single Bearing	Flexible
			--	Amortisseur Windings	Full
423.1a	X0 Zero Sequence Reactance	0.034 pu	--	Cooling Air Volume	700 CFM
425.1a	X'd Transient Reactance	0.152 pu	--	Exciter	Rotating
426.1a	X"d Subtransient Reactance	0.108 pu	--	Voltage Regulator	SE350
427.1a	T'd Transient Short Circuit Time Constant	0.06 sec.	--	Voltage Regulation	1%
428.1a	T"d Subtransient Short Circuit Time Constant	0.008 sec.			
430.1a	T'do Transient Open Circuit Time Constant	0.8 sec.			
432.1a	Ta Short Circuit Time Constant of Armature Winding	0.02 sec.			

* Voltage refers to wye (star) connection, unless otherwise specified.

www.marathonelectric.com

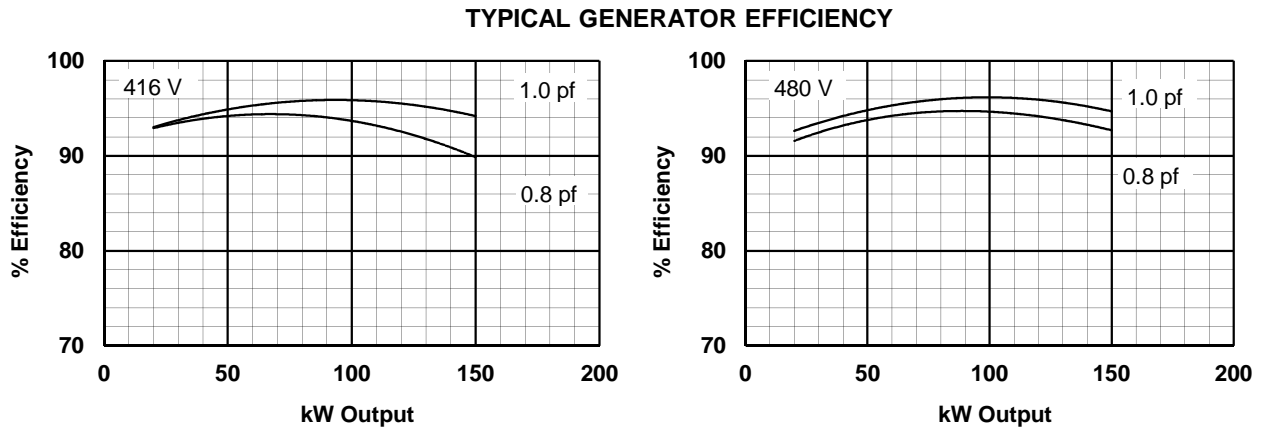
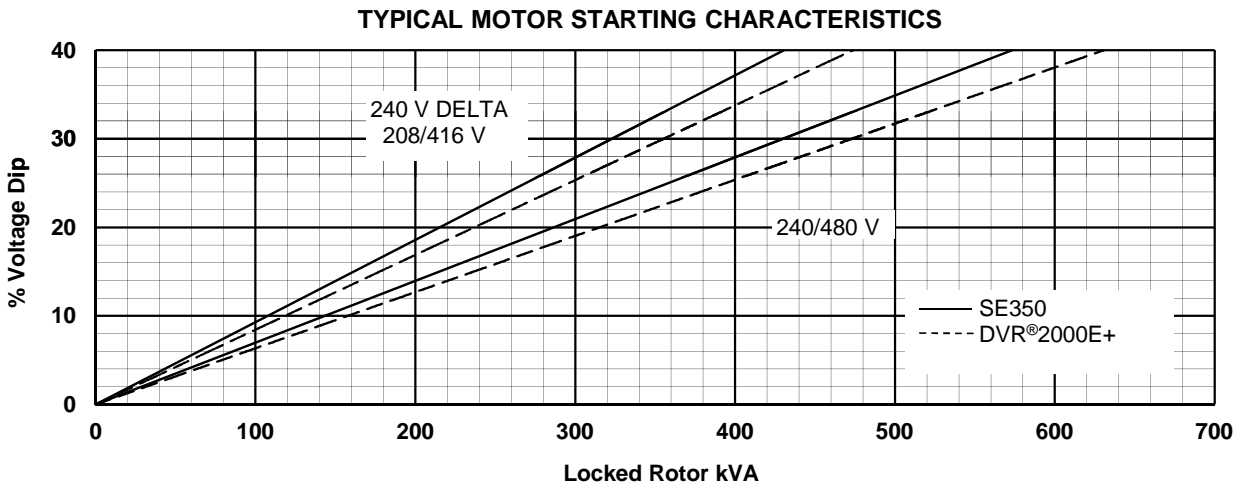
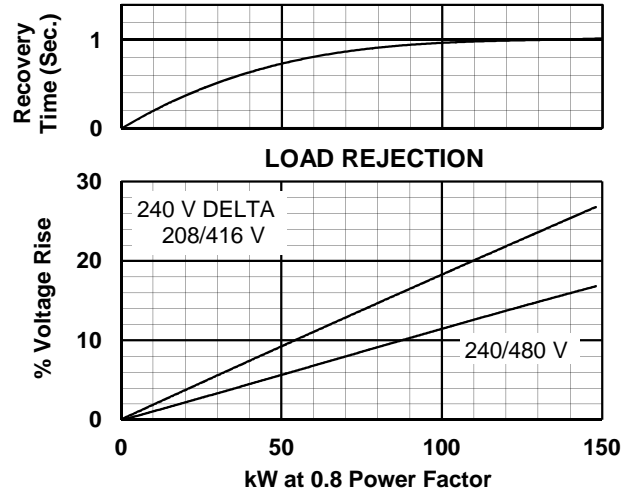
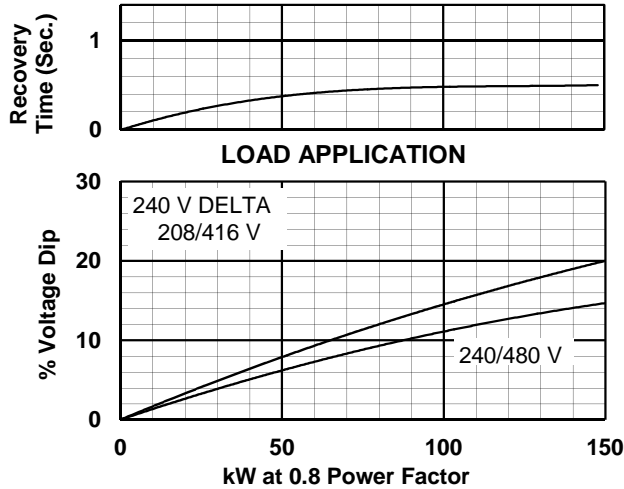


**MARATHON ELECTRIC
SYNCHRONOUS AC GENERATOR
TYPICAL DYNAMIC CHARACTERISTICS**

Basic Model 363CSL1607

Date: 3/28/13

60 HERTZ



Voltage refers to wye (star) connection, unless otherwise specified.

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SE350 Voltage Regulator



VOLTAGE ADJUSTMENT

The screwdriver adjustable potentiometer adjusts the generator output voltage. Adjustment clockwise increases the generator output voltage.

When using a remote voltage adjust rheostat, remove the jumper wire across terminals 6 and 7 and install a 2000 ohm 1/2 watt (minimum) rheostat. This will give $\pm 10\%$ voltage variation from the nominal. (For $\pm 5\%$ voltage variation use a 1000 ohm 1/2 watt rheostat).

STABILITY ADJUSTMENT

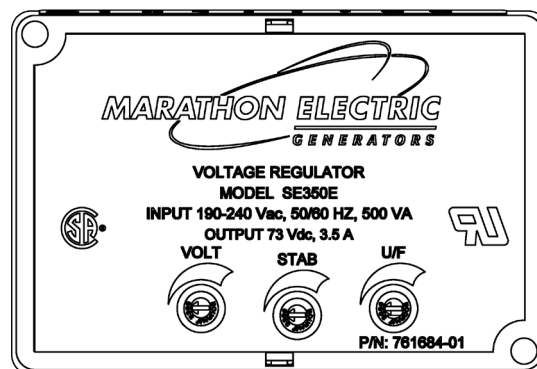
System stability is the ability of the generator to respond to load transients. Decreasing the stability makes the generator less sluggish and faster to respond to load transients. If the stability of the regulator is decreased too much, the generator will tend to hunt under steady state conditions.

The screwdriver adjustable potentiometer adjusts the system stability. Adjustment clockwise increases the stability. Increasing the stability increases the response time of the regulator. Conversely, decreasing the stability decreases the response time of the regulator.

V/HZ ROLL-OFF FREQUENCY ADJUSTMENT

The roll off point is the frequency where the generator voltage starts to decrease. This reduces the Kilowatt load to the engine, which allows the engine to recover in speed under heavy load transient conditions.

Use jumper to select 50 HZ or 60 Hz mode. The screwdriver adjustable potentiometer sets the roll-off frequency from 54-61 Hz in the 60 Hz setting or from 45-51 Hz in the 50 Hz setting. The SE350 has the roll-off point preset to 58 Hz in the 60 Hz mode and 48 Hz in the 50 Hz mode. To change the roll-off point, adjust engine speed to the desired rated speed. (50 or 60 Hz). Set the voltage to the desired setting at rated speed. Adjust engine speed to the desired roll-off point. Turn the potentiometer counterclockwise until the voltage starts to drop off. Then adjust the potentiometer clockwise until the voltage returns to rated voltage. Re-adjust engine speed to rated speed.



SPECIFICATION	SE350 REGULATOR
Sensing & Power Input	190-240 Vac
Burden	500 VA
Output Power- Continuous	73 Vdc at 3.5 Adc (255w)
Output Power - Forcing(240 Vac Input Power)	105 Vdc at 5 Adc (525w)
Regulation	1 .0%
Remote Voltage Adjustment Range	$\pm 10\%$ with 2000 ohm rheostat $\pm 5\%$ with 1000 ohm rheostat
Frequency Compensation	Adjustable
Roll Off Frequency	54-61 Hz for 60 Hz 45-51 Hz for 50 Hz
Weight	6.5 oz.
Operating Temperature	- 40°C to + 60°C
Storage Temperature	- 65°C to + 85°C
Power Dissipation	8 watts maximum
Size	3.94" L X 2.66" W X 2.20: H
Voltage Buildup	Internal provisions for automatic voltage build up from generator residual voltage as low as 10 Vac.
EMI Suppression	Internal Electromagnetic Interference Filter (EMI Filter)

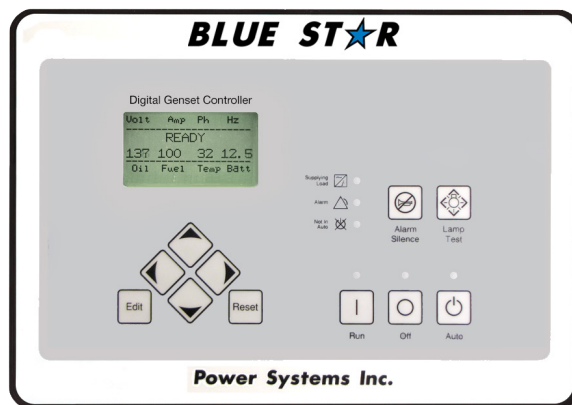
DGC-2020 Gen-Set Controller



Blue Star Power Systems, Inc's Digital Gen-Set Controller (DGC-2020) is a highly advanced integrated gen-set control system. The DGC-2020 is perfectly focused, combining rugged construction and microprocessor technology to offer a product that will hold up to almost any environment and flexible enough to meet your application's needs. This device provides gen-set control, transfer switch control, metering, protection and programmable logic in a simple, easy to use, reliable, rugged, and cost effective package.

Highlights

- ▶ UL Recognized, CSA & CE approved
- ▶ Remote communication options
- ▶ Microprocessor based
- ▶ Rugged encapsulated construction
- ▶ Complete system metering



Standard Features

- ▶ Generator Metering
- ▶ Engine Metering
- ▶ Gen-set Control
- ▶ Engine Protection:
 - Oil Pressure
 - Engine Temperature
 - Overspeed
 - Overcrank
- ▶ BESTCOMS Plus:
 - Programming and Setup Software
 - Intuitive and Powerful
 - Remote Control and Monitoring
 - Programmable Logic
 - USB Communications
- ▶ SAE J1939 Engine ECU Communications (Where Applicable)
- ▶ Extremely Rugged, Fully Encapsulated Design
- ▶ 16 Programmable Inputs
- ▶ 7 Contact Outputs: (3) 30ADC and (4) Programmable 2ADC Rated Contacts
- ▶ Wide Ambient Temperature Range
- ▶ UL Recognized, CSA Certified, CE Approved
- ▶ HALT (Highly Accelerated Life Test) Tested
- ▶ IP54 Front Panel Rating with Integrated Gasket
- ▶ NFPA110 Level One Compliant
- ▶ Real Time Clock with Battery Backup and Event Log
- ▶ Emergency Stop Pushbutton
- ▶ Current Sensing: 5A CT inputs
- ▶ Generator Frequency: 50/60 Hz
- ▶ LCD Display Heater to -40°F
- ▶ Event Recording (up to 99 occurrences)

Standard Gen-Set Monitoring

- ▶ Generator parameters: voltage, current, frequency, real power (Watts), apparent power (VA), and power factor
- ▶ Engine parameters: oil pressure, coolant temperature, RPM, battery voltage, fuel level, engine runtime, and various J1939 supported parameters where applicable

Standard Engine Control Functions

Cranking Control

- ▶ Cyclic or Continuous (Fully Programmable)

Successful Start Counter

- ▶ Counts and Records Successful Engine Starts

Timers

- ▶ Engine Cooldown Timer (Specify)
- ▶ Engine Maintenance Interval Timer (Specify)
- ▶ Pre-Alarm Time Delays for Weak/Low Battery Voltage
- ▶ Alarm Time Delay for Overspeed

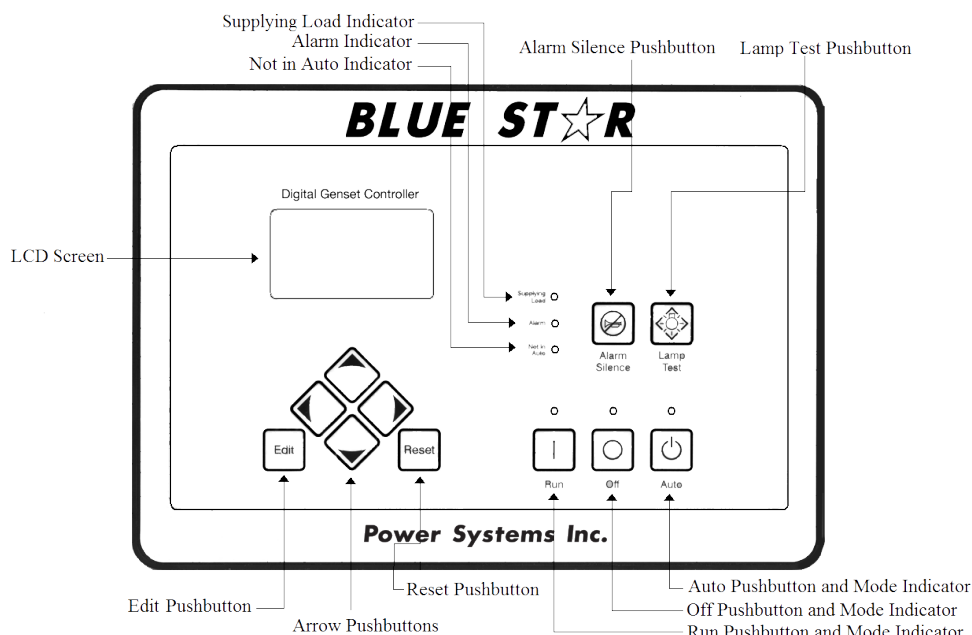
- ▶ Alarm Time Delay for Sender Failure
- ▶ Arming Time Delays After Crank Disconnect:
 - Low Oil Pressure
 - High Coolant Temperature
 - Pre-Crank Delay
- ▶ Continuous/Cyclic Cranking Timing Sequence

DGC-2020 Gen-Set Controller



Front Panel LED Indicators:

- ▶ **Run: Green** – Indicates controller is in the RUN mode
- ▶ **Off: Red** – Indicates controller is in the OFF mode
- ▶ **Auto: Green** – Indicates unit is in the AUTO mode
- ▶ **Not in Auto: Red** – Indicates DGC-2020 is not in AUTO mode
- ▶ **Supplying Load: Green** – Indicates system is supplying current to a connected load
- ▶ **Alarm: Red** – Indicates an alarm situation by continuous illumination
A pre-alarm will flash



Standard Engine Protection Functions

Pre-Alarms (Warnings)

- ▶ Low Oil Pressure
 - ▶ High Coolant Temperature
 - ▶ Low Coolant Temperature
 - ▶ Battery Overcharge (High Voltage)
 - ▶ Weak Battery (Low Voltage)
 - ▶ Battery Charger Failure
 - ▶ Engine Sender Unit Failure
 - ▶ Engine kWe Overload
 - ▶ Maintenance Interval Timer
 - ▶ Low Fuel Level
 - ▶ Fuel Leak Detect
- ▶ All alarms and pre-alarms can be configured via the BESTCOMSPlus PC software or the front panel.

Alarms (Shutdowns)

- ▶ Low Oil Pressure
- ▶ High Coolant Temperature
- ▶ Overspeed
- ▶ Overcrank
- ▶ Fuel Sender Failure

Optional Features

- ▶ Generator Protection
 - 27(2), 32, 40Q, 51(2), 59(2), 81O, 81U
- ▶ Enhanced Generator Protection - 51 and 47
- ▶ Selection of Integrating Reset or Instantaneous Reset Characteristics for Overcurrent Protection
- ▶ Remote Communication to RDP-110 / NFPA-110 Compliant Remote Annunciator
- ▶ Additional (8) Programmable 2ADC Contacts
- ▶ Remote Dial-out and Dial-in Capability with Modem
- ▶ Modbus Communications with RS-485
- ▶ Expandable I/O Capability via J1939 CANBUS
- ▶ Automatic Transfer Switch Control
- ▶ Remote Emergency Stop
- ▶ Multilingual Capability
- ▶ High Fuel Level Pre-Alarm
- ▶ Critical Low Fuel Level Alarm
- ▶ Analog Meters

Generator Protection

- | | | | | |
|---------------------|------------------------|------------------------|----------------------------|------------------------------|
| ▶ Undervoltage (27) | ▶ Underfrequency (81U) | ▶ Overcurrent (51) | ▶ Reverse Power (32) | ▶ Phase Imbalance (47) |
| ▶ Overvoltage (59) | ▶ Overfrequency (81O) | ▶ Phase Imbalance (57) | ▶ Loss of Excitation (400) | ▶ Generator Overcurrent (51) |

All generator protection features are programmable as alarms or pre-alarms.

DGC-2020 Gen-Set Controller



Contact Outputs

For those applications where more output contacts are needed, the DGC-2020 can be adapted to include 8 additional 2ADC rated dry contact outputs. These are real contacts and not the solid-state type that require additional external circuitry to properly operate. These contacts are fully programmable via the easy-to-use BESTCOMSPlus PC software and can be assigned to numerous user-defined functions.

DC Voltage Panel Mounted Modem

The DGC-2020 can provide long distance communication by adding a modem. When a modem is used, the user can access the DGC-2020 from virtually anywhere via a dedicated telephone line. The user can monitor and control the gen-set as if standing right in front of it. The DGC-2020 can also dial out for pre-programmed circumstances to alert the user of selected situations.

RS-485 Communication

When the RS-485 option is selected, the user can send and receive information from the DGC-2020 via the RS-485 communications port and Modbus protocol. This feature allows the DGC-2020 to be fully integrated into the building management system. Please see the instruction manual for the Modbus register list.

Enhanced Generator Protection

In addition to the standard generator protection (27, 59, 81O, 81U) the DGC-2020 can be equipped with a more sophisticated generator protection system. This option provides an overcurrent element (51) with 17 selectable time current characteristic curves and a voltage phase balance protection function.

Transfer Switch Control (Mains Failure)

The DGC-2020 monitors utility (mains) and determines if it is providing power that is suitable for the loads. If the utility supply goes outside of predetermined levels, the generator is started and the utility is disconnected from the load and the generator is connected. When the utility returns to acceptable levels for a sufficient time, the generator is disconnected and the utility is reconnected to the load. It also includes appropriate adjustable timers or time delays for establishing stable utility operation.

Contact Expansion Module (CEM)

The CEM add-on module increases the contact input and contact output capability adding 10 contact inputs and 24 form C contact outputs. This module communicates to the DGC-2020 via SAE J1939 CANBUS and allows the user to program the functionality of these inputs and outputs in the BESTCOMS programmable logic program. The user can add labels for the inputs and outputs that appear on BESTCOMS front panel, and in the programmable logic. All the functionality can be assigned to these inputs and outputs as if they were an integrated part of the DGC-2020. The CEM-2020 module has all of the environmental ratings, like the DGC-2020, including a model for UL Class1 Div2 applications (consult price list for part number). The output ratings of the form C contacts are: (12 contacts) 10A @ 30VDC and (12 contacts) 2A @ 30VDC. The 2A rated contacts are gold flash contacts for low current circuits. The CEM-2020 terminals accept a maximum wire size of 12 AWG while the chassis ground requires 12 AWG wire. The CEM-2020 provides the user with the flexibility to use the same model DGC-2020 gen-set controller for simple applications or more complicated applications that require contact functionality or duplication of contacts for remote annunciation. Flexibility is one of the benefits of the DGC-2020, and this add-on module enhances that benefit even further.

ModBus TCP/RTU (NetBiter RTU-TCP Gateway)

NetBiter® RTU-TCP Gateway connects the fully enhanced DGC-2020 with Ethernet and mobile networks. The gateway acts as a transparent bridge translating DGC-2020 Modbus registers allowing control systems, such as PLCs, SCADA, etc. to communicate over Ethernet. One gateway is required per generator allowing multiple generator sets to be accessed and monitored simultaneously. Note: This option does not interface with BESTCOMSPlus software. Features include: connectivity between serial Modbus devices and the Modbus TCP; RS-232, RS-485 and RS-422 connectivity; Ethernet and mobile network connectivity; 10/100 Mbit/s Ethernet; web-based configuration; DIN rail mounting; and network and serial status indicators.

Load Share Module 2020 (LSM-2020)

The LSM is an easy to connect and use add-on module for the DGC-2020 to allow the DGC-2020 to control the kW load sharing of multiple generator sets. The LSM-2020 is remotely mounted and communicates to the DGC-2020 via J1939 CANbus communications.

Gen-Set Enclosures



Blue Star Power Systems, Inc. gen-set enclosures are specifically designed for optimal protection against the elements. They are designed to protect the entire system from even the most extreme environments, and to reduce sound levels to most specified requirements. Blue Star Power Systems, Inc.'s vast flexibility allows the design of standard enclosures to meet most specifications or requirements. All standard enclosure models are constructed of 14 gauge steel and feature a pitched roof for increased structural integrity and superior watershed. All enclosures feature a rugged UL listed hammer powder coat finish as standard for a long lasting and durable finish in standard white, tan or gray. Custom colors are available as specified.

Enclosure Design Features



- ▶ UL 2200 & CSA Listed as standard
- ▶ All enclosures are 150 MPH wind rated
- ▶ Lockable gasketed doors with draw down latches and Stainless Steel component hinges
- ▶ All Stainless Steel fasteners
- ▶ UL & CSA listed extreme-wear hammer powder coat finish
- ▶ Pitched roof for high structural integrity and superior watershed
- ▶ Above-door drip guards
- ▶ Optimal airflow means no cooling system de-rates on most models
- ▶ Internally mounted exhaust silencers standard up to 600 kW
- ▶ Sound attenuation options
- ▶ Stainless Steel and Aluminum enclosure options

Level 1

Weather Proof Enclosure

Blue Star Power Systems, Inc. Level 1 enclosures have the rugged construction and weather proof protection required for most outdoor environments. These enclosures will effectively protect the gen-set through high wind (150 MPH), rain, snow, and other extreme weather conditions. Weather proof enclosures feature standard hinged lockable doors, a pitched roof to prevent water accumulation and improved structural integrity. The enclosure is painted with extreme-wear UL and CSA listed hammer powder coat finish.



Level 2

Weather Proof Enclosure with Foam

Blue Star Power Systems, Inc. Level 2 enclosures include all of the same great features of the Level 1 enclosures. With the addition of high performance 1.5" Type D Sound Attenuating Foam, our Level 2 Enclosures offer an even lower dBA rating with the same great weather proof protection.



Level 3

Sound Attenuated Enclosure

Blue Star Power Systems, Inc. Level 3 enclosures feature the same great weather proof protection and standard features as the Level 1 & 2 enclosure models, but with a greater emphasis on reducing sound levels. Standard Level 3 features include the same high performance 1.5" type D sound attenuating foam, and the addition of a separate frontal exhaust sound chamber and dual rear air intake to ensure that your system runs exceptionally quiet. These features make this enclosure among the best in the industry for noise reduction and quality.



Sound Attenuation Foam



Polydamp® Type D Acoustical Foam, (PAF) is an acoustical grade, open cell, flexible ether based urethane foam designed to give maximum sound absorption for a given thickness. It has excellent resistance to heat, moisture and chemicals. All applications use 1.5” foam as standard.



Foam Characteristics

Sound Absorption: Nominal values of random incidence sound absorption coefficient per ASTM C384-77 for Plain/Tuffylm

Foam Thickness	Frequency (Hz)					
	125	250	500	1000	2000	4000
(1.5 in) 38.1 mm	15/20	27/49	60/96	77/93	90/82	98/67
(2.0 in) 50.8 mm	20/30	40/66	90/98	100/96	96/85	100/75

	Test Standard	U.S. Standard
Density, Nominal: (lb/ft3-kg/m3)	ASTM-D-3574-91	1.85
Tensile Strength: (PSI-KPa)	ASTM-D-3574-91	12
Elongation, %	ASTM-D-3574-91	120
Tear Resistance: (lb/in - N/M)	ASTM-D-3574-91	1.3
IFD: (PSI - KN/M2)	ASTM-D-3574-91	30
Compression Set (50%): %	ASTM-D-3574-91	10
Air Permeability (Tested at 1” thickness): (Rayles/M)	ASTM C-522	
Thermal Conductivity		
(BTU/hr. ft2, °F/in.)	ASTM C-177	0.25

Service Temperature	
Continuous	-45°F (-43°C) TO 212°F (100°C)
Intermittent	250°F (121°C)
Flame Resistance	
UL94	HF-1
FAR.853(B)	PASS
SAEJ-369(B)	PASS
MVSS-302	PASS
DIN	PASS
Humidity Resistance	
Excellent; no significant decrease in tensile strength or elongation after 5 hrs. of steam autoclave at 250°F (121°C) per ASTM D3574-86, Test J.	
Chemical Resistance	
Excellent - no significant change in strength after 4 weeks immersion in common solvents, alkalies, acids, and water.	
Estimated Service Life:	
Min. 10 years at 80F (27°C) and 95% R.H.	

Adhesive Characteristics

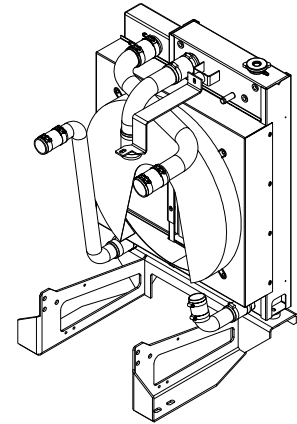
P4 is a high performance unsupported acrylic pressure sensitive adhesive exhibiting aggressive tack, high peel and shear, and good heat resistance. In addition, it has good chemical and plasticizer resistance as well as excellent long term aging and the ability to withstand environmental extremes.

Adhesive Thickness (Nominal)	0.004”
Color of Adhesive	Water Clear
Release Liner	76 lb Polycoated bleached kraft paper
Service Temperature	-40°F +200°F

Radiators



Blue Star Power Systems, Inc. radiators offer a variety of styles and configurations including radiator and charged air assemblies, radiator and aftercooler assemblies with durable core construction. Our radiators are compact and efficient meeting the most stringent enclosure footprint requirements. All radiators are sized for 50°C (122°F) ambient. The single-source design ensures a perfect match with your genset package.



Radiator Features

Standard Radiator Package

- ▶ Engine-specific tank design with variant coolant connection locations and sizes (dependant on engine size)
- ▶ Complete cooling package with mounting foot and plumbing kit
- ▶ All steel construction of top and bottom tanks
- ▶ Dual Core designs -
 - Jacket Water / Charged Air Circuit
 - Jacket Water / After Cooler Circuit
- ▶ Individual radiators designed to meet manufacturer's specific requirements
- ▶ Top tank has built in expansion capacity - no need for an external recover tank
- ▶ Full or partial deration system built into the top tank
- ▶ Standard cooling package includes fan shroud & fan guard
- ▶ Corrosion preventive options:
 - Hot dipped galvanizing on all steel parts or stainless steel
 - Epoxy coated cores

Fan-On Radiator Design

- ▶ Engine-specific tank design with variant coolant connection locations and sizes (dependant on engine size)
- ▶ Rigid built construction for fan support
- ▶ High speed bearings within pillow blocks
- ▶ Dual Core designs with variable jacket water / after cooler circuit designs
- ▶ All steel construction of top and bottom tanks
- ▶ Individual radiators designed to meet manufacturer's specific requirements

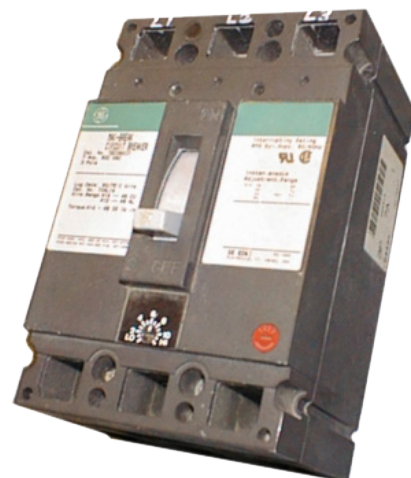
MC Series Circuit Breakers



Blue Star Power Systems, Inc's MC (Molded Case) Series Circuit Breakers are the highest quality in the industry. They will protect the power system and corresponding equipment from damaging fault currents circuits and overloads.

MC Series Features

- ▶ UL 489 listed
- ▶ Broad product line to meet virtually any application need
- ▶ Reduced downtime: tripped breakers can be easily spotted and immediately reset
- ▶ Eliminates single phasing: a common trip bar disconnects all poles simultaneously
- ▶ Offers flexibility through use of a wide variety of accessory devices and attachments
- ▶ Repetitive operation: no fuses to replace
- ▶ Breakers can be easily tested: fuses must be destroyed to confirm calibration accuracy



Circuit Breaker Type	Ampere Rating	No. Poles	Maximum Voltage Rating	UL Listed Interrupting Ratings (kA)						Dimensions (in.)		
				VAC								
			AC	120	120/240	240	277	480	600	H	W	D
TEB	10-100	2	240	-	-	10	-	-	-	6.3125	2.75	3.375
		3									4.125	
TED	10-150	2	480	-	-	18	-	18	-	6.3125	2.75	3.375
		3	480						14		4.125	
			600									
TQD	100-225	2	240	-	10	10	-	-	-	6.5625	2.75	2.625
	100-225	3	240		-	10					4.125	2.625
SFH	70-250	2	480	-	-	65	-	35	-	10.12	4.12	3.81
		3	600						22			
TJD	250-400	2	240	-	22	22	-	-	-	10.125	8.25	3.8125
		3	240		-	22						
TJJ	125-400	2	600	-	-	42	-	30	22	10.125	8.25	3.8125
		3										
TJK6	250-600	2	600	-	-	42	-	30	22	10.125	8.25	3.8125
		3										
SKHA	300-800	2	600	-	-	42	-	30	22	15.5	8.25	5.5
		3										
SKHA	600-1200	2	600	-	-	42	-	30	22	15.5	8.25	5.5
		3										

TPS Series Block Heaters



The TPS engine block heater is designed to preheat diesel and gaseous engines. It is simple to install, lightweight, and heats engines up to 12L displacement. Thermosiphon circulation of the coolant delivers even heat throughout the entire engine block.

Features

- ▶ cULus Listed
- ▶ CE Compliant
- ▶ Various temperature settings available, including an optional adjustable thermostat 90° - 130°F (32° - 54°C)
- ▶ Can be supplied with UL marked 120 or 240V NEMA plug



Specifications

Part Number	Volts	Watts	Amps	Male Plug	Outlet Size (Inches)
13224	120	500	4.2	Yes	5/8
14209	240	500	2.1	Yes	5/8
10014	120	1000	8.4	Yes	5/8
10015	240	1000	4.2	Yes	5/8
10016	120	1500	12.5	Yes	5/8
10017	240	1500	6.3	Yes	5/8
10018	120	1800	15	Yes	5/8
10019	240	2000	8.3	Yes	5/8

DuraLite Air Cleaner (Single Stage)



DuraLite Air Cleaners are tough, non-metallic, lightweight, self-supporting and completely disposable. They are also easy to install, durable, and reliable. They are designed to function well under high and severe pulsation conditions found in many applications. Vibration-resistant media is potted into molded housings of rugged ABS plastic – so they don't fall apart as other designs might. They can be mounted vertically or horizontally.



SPECIFICATIONS

- ▶ No serviceable parts - Air cleaner housing and filter are one unit
- ▶ Designed to withstand severe intake pulsation
- ▶ Economical replacement cost
- ▶ Self-supporting, sturdy
- ▶ Very reliable: only one critical seal
- ▶ Lightweight and compact in size
- ▶ Non-metallic, non-corrosive
- ▶ Completely disposable - acceptable for normal trash pick-up (DuraLite should not be incinerated)
- ▶ Easily installed and maintained
- ▶ Minimal removal clearance needed: only 1.5"
- ▶ Three airflow styles available to fit virtually any engine intake configuration
- ▶ Various media available for specific genset applications: high pulsation, high humidity, etc.
- ▶ Temperature tolerance: 180°F/83°C continuous 220°F/105°C intermittent

CPJ Series Critical Grade Silencers



Blue Star Power Systems, Inc.'s "CPJ" Series is the accumulation of research and development offering a compact silencer without compromising performance. It incorporates a unique combination of resonator chambers, acoustically packed internal components and diffusers to achieve a stunning level of performance for its size. All CPJ series silencers are critical grade silencers and are packed with insulation to greatly reduce radiated noise and exterior shell temperature.



Standard Construction Features

- ▶ Available in sizes from 2 inch to 12 inch
- ▶ Multitude of inlet/outlet design styles to meet almost any requirement
- ▶ Packed with fiberglass insulation to reduce shell temperature and noise levels
- ▶ Fully welded double shell carbon steel weldment construction, corrosive resistant
- ▶ High density fiberglass acoustic blanket good to 1500°F, wrapped with 304 Stainless Steel wire mesh cloth and encased in a carbon steel perforated facing
- ▶ Black phenolic resin based finish paint

Optional Construction Features and Accessories

- ▶ Stainless Steel construction
- ▶ Aluminum construction
- ▶ Aluminized Steel construction
- ▶ Vertical mounting legs
- ▶ Round mounting bands
- ▶ Horizontal mounting saddles
- ▶ Horizontal and vertical shell lugs
- ▶ Special finish per specification
- ▶ Air leak test
- ▶ ASME code construction
- ▶ Oversized flanges
- ▶ Acoustic shell lagging
- ▶ High temperature acoustic pack material
- ▶ Contact factory for additional features to meet your requirements

Model #	Part #	Inlet Size	Outlet Size	Flanged Connection	WT (lbs)
CPJS-02	10660	2.0" ID	2.0" OD	No	12
CPJS-25	10661	2.5" ID	2.5" OD	No	18
CPJS-03	10662	3.0" ID	3.0" OD	No	20
CPJS-35	10663	3.5" ID	3.5" OD	No	30
CPJS-04	10664	4.0" ID	4.0" OD	No	31
CPJS-05	10665	5.0" ID	5.0" OD	No	50
CPJS-06	10666	6.0" ID	6.0" OD	Yes	50
CPJS-08	10667	8.0" ID	8.0" OD	Yes	120
CPJS-10	10668	10.0" ID	10.0" OD	Yes	180

Engine Starting Batteries

Built to Handle Extreme Conditions

Blistering heat and bitter cold are ruthless battery killers. That's why Blue Star Power Systems, Inc. utilizes the Exide pioneered climatized battery. Designed to offer you long-life and high-performance starting power that will get your gen-set running even under extreme conditions. Blue Star Power Systems, Inc.'s "all-climate" Exide batteries stand up to the harshest temperatures and are available in sizes and configurations to fit almost any application.



Standard Features

- ▶ Unique Manifold Vent - Virtually eliminates corrosion by venting gases away from terminals and cables
- ▶ Exclusive TRP™ Construction – Rib reinforced TRP™ container significantly improves the vibration and impact resistance
- ▶ Armored Plate Cell Bonding - Vibration is the number one killer of commercial batteries. To solve this problem, the cells of every Exide battery are bonded
- ▶ Polyethylene Enveloped Separator Design – Super tough polyethylene material reduces electrical resistance and provides higher cranking performance
- ▶ Center Lug Design - Suppresses the vibration inherent in traditional construction for improved performance (where applicable)
- ▶ TTP™ - Through-the-Partition inter-cell connectors create a shorter current path to deliver more power to the terminals
- ▶ Heavy Duty Cases - Reinforced polyethylene or hard rubber cases stand up to the demands of standby gen-sets
- ▶ Convenient Lifting Slots - a handle is built in the top of the battery for easy carrying and transportation
- ▶ Protective Bottom Design - Waffled bottom design provides protection against nuts, bolts, or stones that might become lodged under the battery
- ▶ Computer Designed Radical Grids - An improved state-of-the-art design which adds power and resists vibration
- ▶ Threaded Accessory Ports - Features a sealed "O" ring that does not work loose during severe service (78DT only)

Specifications

BCI Group Size	Part Number	CCA at 0°F	CCA at 32°F	Dimensions (Inches)			Weight (lbs.)
				Length	Width	Height	
78DT	78DT-72	850	1000	10-3/16	6-13/16	8-1/8	54
4D	COM-4D-P	1000	1200	19-9/16	8-5/16	10	95
8D	COM-8D-P	1155	1380	20-7/8	11	10	117

BC1206A Series Battery Chargers



The BC1206A charger is built to stand up to the punishing power generation environment. It is engineered to exacting performance specifications, including cULus listing for an extra margin of safety.

Features

- ▶ Automatic 12V 6A, 2-Stage charge rate
- ▶ UL 1236 listed
- ▶ Watertight, shock proof and corrosion proof
- ▶ LED status indicators
- ▶ Reverse polarity protected
- ▶ Short circuit protected
- ▶ EMI/RFI Shielded



Specifications

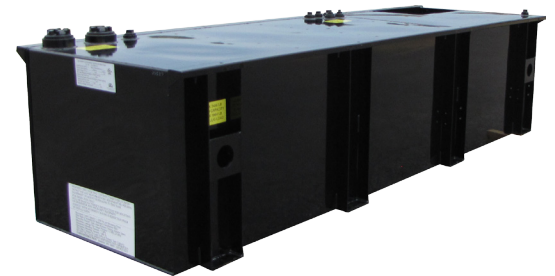
Specifications	
Output Voltage:	12VDC
Input Rating	
Input Voltage Range:	100 - 130VAC
Input Current Rating:	1.6A maximum
Float - Maintenance Stage	
Float Voltage:	13.3VDC
Float Current:	0.1 A
LED Status:	Green LED On
Full Load - Bulk Stage	
Full Load Voltage:	12.0 - 14.1VDC
Full Load Current:	0.2 - 6.0A
LED Status:	Red LED On

Reverse Polarity Protection	
Available as Standard:	Yes
Short Circuit / Overload Protection	
Maximum Short Circuit Current:	8A (typical)
Current Limit:	7A (+/- 10%)
Operating Temperature Range	
Minimum Temperature:	-20° C
Maximum Temperature:	50° C
Agency Certification	
This product is listed under UL 1236 for battery chargers.	
Warranty	
Warranty Period:	1 Year
Weight	
3.5 Pounds	

Sub-Base Fuel Tanks



Blue Star Power Systems, Inc. sub-base fuel tanks are listed and manufactured under UL 142 & ULC-S601 standards for steel above ground tanks, which guarantees that every fuel tank meets the structural and mechanical integrity requirements for mounting a generator set directly on top of the tank. This provides a convenient, efficient, and safe way to store fuel for your gen-set.



Sub-Base Fuel Tank Standard Features

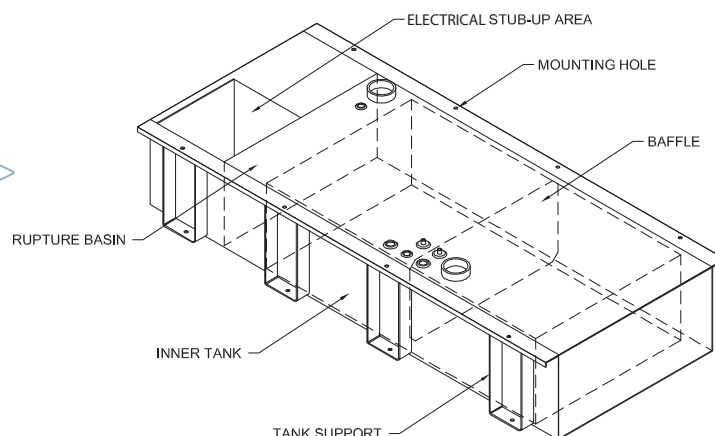
- ▶ Double walled secondary containment UL 142 & ULC-S601 Listed
- ▶ Electrical stub-up openings are standard to provide generator set wiring provisions through the base tank
- ▶ Heavy gauge steel construction
- ▶ Durable two part catalyzed epoxy finish paint
- ▶ Standard fittings: fuel supply with check valve (sized per unit), fuel return (sized per unit), 2" NPT for normal vent, 2" - 6" NPT for emergency vent (sized per unit), 2" NPT for manual fill, 1 1/2" NPT for fuel level gauge, and 3/8" NPT basin drain (plugged). Removable 1/2" supply dip tube standard (size may vary with gen-set model). 1 1/2" NPT for leak detection
- ▶ Interior tank baffle: Separates cold engine supply fuel from hot returning fuel
- ▶ Direct reading fuel level gauge
- ▶ Low fuel level and fuel leak alarms

Design Options

- ▶ High and critical low fuel level shutdowns or alarms
- ▶ Full pumping control systems for a true day tank system with a full array of electrical options
- ▶ Additional Tank Fittings
- ▶ Custom Fuel Tank Designs (sizes and shapes)
- ▶ Fuel Heater
- ▶ Fill / Spill Containment

Blue Star Power Systems, Inc. offers two distinctive types of double wall sub-base fuel tanks, those with an electrical stub up area (standard) and those without. Each type can be customized to any specification to meet your specific requirements.

UL 142 & ULC-S601 double wall secondary containment sub-base fuel tank with stub-up.



Engine Generator Set Two (2) Year 2000 Hour Standby Limited Warranty



Your Blue Star Power Systems Inc. product has been designed and manufactured with care by people with many years of experience. Blue Star Power Systems Inc. warrants to its Buyer that the product is free from defects in materials and/or workmanship for the period of time outlined below. If the product should prove defective within the time period outlined below, it will be repaired, adjusted or replaced at the option of Blue Star Power Systems Inc., provided that the product, upon inspection by Blue Star Power Systems Inc., has been properly installed, maintained and operated in accordance with Blue Star Power Systems Inc.'s Installation and Operating Manuals. This limited warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, and (2) the generator set is routinely exercised in accordance with operating instructions. This warranty does not apply to malfunctions caused by physical damage, misuse, improper installation, repair or service by unauthorized persons, or normal wear and tear. The warranty is not assignable.

Blue Star Power Systems Inc. product warranty period: Engine generator set: Parts and Labor for two (2) years from the date of factory invoice or 2000 hours (whichever occurs first). Accessories (installed on the engine generator set or shipped loose): Parts and Labor for one (1) year from the date of factory invoice or 2000 hours (whichever occurs first). Transfer Switches: If purchased with a generator set (same order number): Parts and Labor for two (2) years from the date of factory invoice or 2000 hours (whichever occurs first).

The start of the warranty period can be adjusted to the date of unit start-up (limited to 180 days from invoice date) provided that the following information is provided to Blue Star Power Systems Inc. at the time of start-up. The warranty will not be effective unless a copy of the Blue Star Power Systems Inc. start-up validation checklist is properly and completely filled out and returned to Blue Star Power Systems Inc. within 30 days of start-up. Additionally, the engine manufacturer's engine registration form must be completed and returned to the engine manufacturer as stated in the instructions with the registration form.

To obtain warranty service: Contact your nearest Blue Star Power Systems Inc. Service Representative. For assistance in locating your nearest authorized service representative, contact Blue Star Power Systems Inc., Attention: Service Department (see contact information below).

Warranty service may be performed by authorized Blue Star Power Systems Inc. service providers only. Service work performed by unauthorized persons will void all warranties.

Blue Star Power Systems Inc. shall not be liable for any claim in amount greater than the purchase price of the product. In no event shall Blue Star Power Systems Inc. be held liable for any special, indirect, consequential or liquidated damages.

Blue Star Power Systems Inc. shall not be liable for any claim that requires replacement of engine, part, or component of the gen-set that is no longer manufactured or available. Additionally, Blue Star Power Systems Inc. will not be liable for any engine replacement that may require emissions tier level change.

THERE ARE NO EXPRESS WARRANTIES OTHER THAN THOSE DESCRIBED HEREIN. THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, OR WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE.

The following items and/or circumstances are excluded from this limited warranty:

- ▶ Engine starting batteries: The battery manufacturers' warranty applies. Consult your local battery supplier for warranty service.
- ▶ Fuel system and/or governing system adjustments performed during or after start-up.
- ▶ Normal maintenance items: Consumable items such as belts, filters and hoses.
- ▶ Adjustments and tune-ups performed during start-up or thereafter.
- ▶ Loose connections (electrical and mechanical) not found during start-up.
- ▶ All fluid level related items including low coolant not found during start-up or checked during regular maintenance intervals.
- ▶ Equipment modifications made without the written consent of Blue Star Power Systems Inc. will void all warranties.
- ▶ Shipping damage of any type. All equipment is shipped F.O.B. factory and risk of loss transfers to the carrier once loaded for shipment. It is the responsibility of the receiving party to sign for the receipt of, and note any shipping damage to the equipment. Freight damage claim filing is the responsibility of the receiving party. In the rare event that damage occurs during shipment, Blue Star Power Systems Inc. will not warrant any damage to the unit resulting from shrink wrap.
- ▶ Any special access fees, requirements or after hours scheduling to gain access to the equipment for warranty service purposes.
- ▶ Buyer requested rental generators used while warranty work is being performed.
- ▶ Damages caused by acts of nature, such as lightning, wind, flood, or earthquake.
- ▶ Any damage due to situations beyond the control of the manufacturing and/or workmanship of the product.
- ▶ Use of non-protected steel enclosure within 10 miles of the coast.
- ▶ Improper installation or operation as outlined in the Installation and Operation Manuals.
- ▶ Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
- ▶ Equipment purchased at the standby rating that is being used in a prime power application(s).
- ▶ Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
- ▶ All travel labor and mileage on portable equipment must be approved before any work is performed.

Terms of warranty shall be deemed made and executed in Lake Crystal, Blue Earth County, Minnesota. Venue for all legal proceedings shall be in Blue Earth County, Minnesota.