



DATA SHEET DIESEL GENERATOR SET

GSBD23300S-UL



► Model

GSBD23300S-UL-416

ENGINE BRAND



BAUDOUIN

ENGINE MODEL



16M55G8D2/6

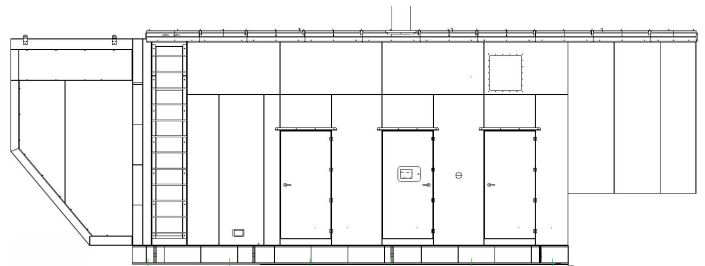
ALTERNATOR BRAND



STAMFORD

GENERATOR
CONTROLLER

DSE 7410



► GENSET RATING

ENGINE	ALTERNATOR	VOLTAGE	PH	Hz	STANDBY POWER		POWER FACTOR	CURRENT
		V			kW	KVA		A

16M55G8D2/6	S9L1D-G4 WDG312	416 V	3PH	60HZ	3300	4125	0.8	5724.92
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► Certifications



Standby Power. Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

► ENGINE FEATURES

» BRAND	BAUDOUIN
» MODEL	16M55G8D2/6
» EXHAUST EMISSIONS	TIER 2
» RPM	1800
» STANDBY RATING kWm	3600
» STANDBY RATING bhp	4828
» PRIME RATING kWm	3300
» PRIME RATING bhp	4425
» NUMBER OF CYLINDERS	16
» ASPIRATION	TURBOCHARGED AND AFTERCOOLED
» DISPLACEMENT in ³	5321.3
» ENGINE AIR FLOW CFM	9128.8
» GOVERNOR TYPE	ELECTRONIC
» CONTROL VOLTAGE v	24
» BORE/STROKE, in ()	7.08X8.46(180X215)
» COOLANT CAPACITY WITHOUT RADIATOR gal	92.6
» OIL CAPACITY, TOTAL gal	153.8

► FUEL CONSUMPTION

STANDBY POWER		
LOAD	GAL/hr	L/hr
100%	234.5	887.5
75%	173.4	656.5
50%	121.1	458.3
25%	70	264.9

► ALTERNATOR FEATURES

» BRAND	STAMFORD
» MODEL	S9L1D-G4
» FREQUENCY	60 Hz
» PHASES	3
» WINDING LEADS	6
» INSULATION SYSTEM	H CLASS
» CONTROL SYSTEM	SEPARATELY EXCITED BY P.M.G.
» PROTECTION	IP23
» POWER FACTOR	0.8
» COOLING AIR CFM	7055.87
» VOLTAGE REGULATION (%)	+/-0.5

► GENERATOR CONTROLLER

» MODEL DEEPSEAG8600



The DSEG8600 is a parallel genset controller with integral heater designed for complex paralleling applications. The DSEG8600 can be configured to provide paralleling for up to 4,032 generators on a single site and provides a wide range of high-end features for multiple application environments. The module is configurable for use as a single-set controller, multi-set controller, mains (utility) controller or group controller.

KEY FEATURES

- 4 module applications in one product (single-set, multi-set, mains (utility) and group)
- Flexible bus segments
- Slip sync and sync (phase) lock synchronising control
- Advanced multi-set communication (AMSC) link with optional redundancy
- Shared virtual inputs, outputs and data via AMSC
- Advanced PLC functionality including multi-purpose PIDs
- Flexible inputs and outputs
- DSENet® expansion support
- PC configuration using DSE Configuration Suite
- Multiple language support

- Enhanced 6-line high-resolution heated display (240 px x 128 px) with on screen application diagrams
- Integrated gasket (IP65 protection)
- 2 integrated RS485 ports providing Modbus RTU support
- Integrated Ethernet port providing Modbus TCP and SNMP v2c support
- Data logging of up to 20 parameters
- Multi-level PIN protected front panel editor
- Manual front panel and automatic control modes

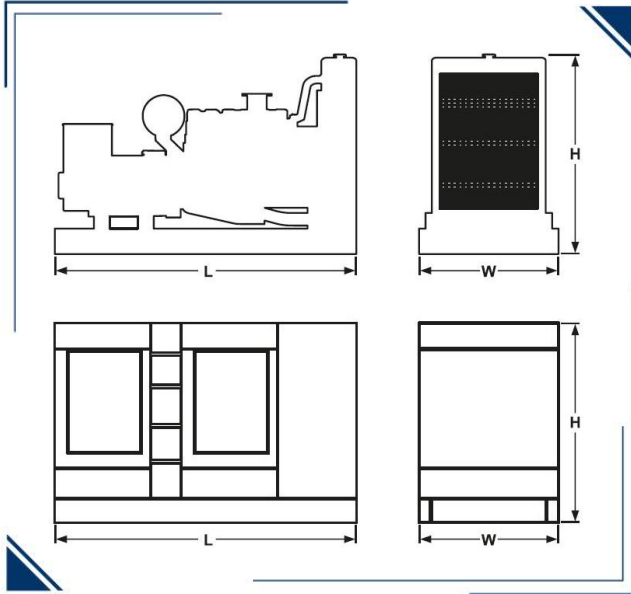
Single-Set Controller Key Features

- Single generator, single mains (utility), synchronising ATS with short / long-term parallel control
- 3 phase generator and mains (utility) sensing with protection
- Mains (utility) failure detection including mains (utility) decoupling detection
- Based load and peak lopping / shaving control
- Latest ECU / ECM support for a wide range of engine manufacturers
- Integrated governor and AVR control
- Mains (utility) and generator positive, negative and zero voltage sequence alarms

Multi-Set Controller Key Features

- Multiple generator synchronising and droop / isochronous loadsharing control
- 3 phase generator and bus sensing with protection
- Latest ECU / ECM support for a wide range of engine manufacturers
- Integrated governor and AVR control
- Dead bus synchronising
- Generator and bus positive, negative and zero voltage sequence alarms

► DIMENSIONS AND WEIGHT



OPEN GENSET					
DIMENSION	Length (L)	Width (W)	Height (H)	Weight	Noise Level
	IN			Lbs	dB
	315	118	143		
ENCLOSED GENSET LEVEL 2					
DIMENSION	Length (L)	Width (W)	Height (H)	Weight	Noise Level
	IN			Lbs	dB
	421	134	157		

► ACOUSTIC ENCLOSURE

Acoustic enclosure designed and manufactured with 14 gauge carbon steel sheet, polyurethane acoustic coating, access and air expulsion to avoid gas accumulation, drainage system to avoid liquid accumulation. Electrostatic painting for extended life.
We have options for enclosures in aluminum or stainless steel

► STANDARD FEATURES & ACCESSORIES

✓ DSE 9470 Battery Charger	✓ Emergency Stop Button
✓ Battery and Battery Rack	✓ Flex Fuel Lines
✓ ABB Main Line Circuit Breaker	✓ Protection Covers for Rotating Parts
✓ AVR	✓ Exhaust Insulation Cover
✓ Hotstart Pre heater 2 RMP-CSM10902-000	✓ Anti Vibration Pads between Engine/Alternator & Base Frame
✓ Residential Grade Silencer Open Unit	✓ Operation and Maintenance manuals
✓ Critical Grade Silencer Inside Enclosure	✓ 24 Months /1000 hours Limited Standby Warranty

► OPTIONAL ACCESSORIES

Paralleling Adder (DSE8610 & Motorized Breaker)	Enclosure AC light and On/Off Switch
120V GFCI Receptacle	Enclosure DC light and On/Off Switch
240V Receptacle	Enclosure space Heater (1500w/120v)
Alternator Strip Heater	Load Center / Distribution Board (100 A, 12 Breaker)
Battery Blanket Heater	Load Center / Distribution Board (200 A, 8 Breaker)
Battery Disconnect Switch	AVR UPGRADE
Battery Pad Heater	Oil Pan Heater
Battery Restraint	Relay - 10A Common Alarm
Control Panel Heater	Relay - 10A Run Relay
DSE2157 Output Module (8 dry contacts)	Remote E-Stop- Breaker Glass Type / Nema 3R
DSE2520 Remote Display Module	Remote E-Stop- Breaker Glass Type / Nema 4X
DSE2548 Remote Annunciator (16 light)	Remote E-Stop- Flush Mount
DSE2548 Remote Annunciator (24 light)	Remote E-Stop- Surface Mount
DSE2548 Remote Annunciator (8 light)	Remote E-Stop- Visual/ Plastic Hinged Cover
DSE890 3G GATEWAY	Spring Isolator- Non Seismic (ACE 121 Series) SKIRT NOT INCLUDED
GSM/GPS ANTENNA 3M RG-174, GSM-SMA(M), GPS-SMA(F)	Spring Isolator- Seismic/Restraint (ACE 821 Series) SKIRT NOT INCLUDED
DSE9641 10A Battery Charger	Voltage Adjust Rheostat
DSE9470 10A Battery Charger	Automatic Transfer Switch

► OPTIONAL UL142 SUB BASE TANK

	24 hr	48 hr	72 hr
Fuel Capacity (gal)	6200		
Dimensions (L/W/H) in			
Weight lb			



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Laredo, Texas 78041
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UL 142 Tank

DESCRIPTION

The IGSA POWER subbase fuel tanks are listed and manufactured under UL 142 standards. Every IGSA tank meets the structural and mechanical integrity requirements for installing your generator set directly on top of the tank. The tank is constructed of high-strength carbon steel and has a storage capacity ranging from 100 to 15,000 gallons. The tank's structure is designed to withstand external loads and resist corrosion, ensuring a long service life.

KEY FEATURES

Primary vent

- The primary ventilation system allows air to enter and exit the tank while it's being filled or emptied, preventing pressure or vacuum buildup inside the tank.

2 emergency vent

- Are designed to automatically open when the pressure in the tank exceeds a certain level, allowing excess pressure to be safely released and preventing a potential explosion or tank collapse

Mechanical level fuel gauge

- A Mechanical Level Fuel Gauge is a device that measures the fuel level in a tank. It's a mechanical device that uses a float and a tape or indicator to measure the fuel level. The float moves up and down with the fuel level, and the tape or indicator shows the fuel level on a graduated scale. This device provides a simple and reliable way to monitor the fuel level in a tank

Rupture basin switch

- A switch that activates in the event of a fuel tank rupture or leak, and fuel spills into the containment basin. This switch is part of a safety system that monitors the fuel level in the containment basin and triggers an alarm or shuts off the fuel supply in the event of a leak

2 additional ports of 2"



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Ratings

RPM	Gross Engine Output				Net Engine Output			
	PRP		ESP		PRP		ESP	
	kWm	BHP	kWm	BHP	kWm	BHP	kWm	BHP
1800	3300 *	4425 *	3600	4828	\ *	\ *	\	\

1 kWm = 1,34102 BHP

When the engine is used with a cooling system using an electrically driven fan, net engine output data may change and quoted figures should be used for reference only

Basic data

Engine model	16M55G8D2/6
N° of Cylinders / Valves	16 / 64
Cylinders arrangement	At Vee
Bore x Stroke (mm)	180 x 215
Displacement (L)	87.5
Thermodynamic Cycle	Diesel 4 stroke
Firing Order	A1-B1-A3-B3-A2-B2-A5-B5-A8-B8-A6-B6-A7-B7-A4-B4
Mean Piston Speed (m/s)	12.9
BMEP @ ESP (Bar)	27.43
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System	High Pressure Common Rail
Aspiration	Turbocharged and Aftercooled
Compression ratio	16.5 : 1
Flywheel housing	SAE 00
Flywheel	21"
Rotation Viewed from Flywheel...	Counterclockwise
Allowed static bending moment of the flywheel housing....	/
N° of teeth on flywheel ring gear	202
Inertia of flywheel (kg•m ²)	20.78
Inertia of crankshaft (kg•m ²)	17.1
Emission standard	EPA Tier2
Overall Dimensions without radiator (Length x Width x Height) (mm)	4161×1953×2468
Engine dry weight without radiator and without radiator pipes (kg)	11500
Engine dry weight with radiator and radiator pipes (kg)	N/A
Engine wet weight with radiator (includes oil, coolant) (kg)	N/A

* The indicated PRP Power is for reference only. This engine is designed for emergency standby power (ESP) applications only.

DPK-TDS-EN-16M55-9008-22-11-30 Moteurs Baudouin reserve the right to modify these specifications, without notice. Document not contractual.

	Model : 16M55G8D2/6	Date : 30/11/22
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Air intake system

Air intake temperature rise (°C)	≤ 5
Air intake restriction clean filter (mBar)	≤ 35
Air intake restriction dirty filter (mBar)	≤ 70
Recommended air flow @ PRP (m³/min)	249.3
Recommended air flow @ ESP (m³/min)	258.5
Min. diameter of intake pipe (mm)	140

Aftercooling system

Aftercooler system type	Air to Water
Max. intake temperature @ 25°C ambient temperature (°C)	55
Max. difference between intake temperature and ambient temperature (°C)	30
Max. intake pressure drop of aftercooler (mBar)	60

Lubrication system

Oil capacity Low / High (L)	405 / 500
Oil pressure in normal condition idle speed (Bar)	≥ 1.8
Oil pressure in normal condition at 1800 Rpm @ PRP (Bar)	4 - 6.5
Lowest oil pressure alarm (shutdown) (Bar)	1.8
High Oil Pressure Warning	6.5
Max. oil temperature (°C)	105
Oil flow at 1800 Rpm (L/min)	1460
Oil fuel consumption ratio based on engine fuel consumption data	≤ 0.4g/kW·h
Total system capacity (including filters) (L)	582

Heat balance test data (with ambient temperature 25 °C)

Total heat dissipation @ ESP (kJ/s)	5467
- Heat Rejection to Jacket Water @ ESP (kJ/s)	1376
- Heat Rejection to Low temperature circuit @ ESP (kJ/s)	861
- Radiated Heat to Ambient @ ESP (kJ/s)	358
- Heat Rejected to Exhaust @ ESP (kJ/s)	2872

Exhaust system

Max. exhaust back pressure (mBar)	150
Max. exhaust temperature before turbocharger (°C)	740
Max. exhaust temperature after turbocharger (°C)	550
Exhaust flow @ PRP (m³/min)	832.1
Exhaust flow @ ESP (m³/min)	861.4
Min. diameter of exhaust pipe (mm)	280
Max. bending moment of exhaust gas exit flange (Nm)	10

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Cooling system without radiator

System designed for ambient temperature up to (°C) ¹	 \
Radiator type	 \
Fan type	 \
Min. inside diameter of coolant outlet pipe (mm)	 LT 76 / HT 96
Coolant capacity of radiator and pipes (L)	 \
Coolant alarm (shutdown) temperature (°C)	 112
Thermostat opening temperature / full open temperature (°C)	 82 / 92
Max. additional restriction for external cooling circuit (Bar)	 HT 0.6 / LT 0.4
Coolant capacity of the engine (L)	 350.5
Cooling fan airflow (m³/min)*	 \
Fan absorbed power (kW)	 \
Additional restriction (for reference) - Duct allowance (Pa)	 150

* Air flow figure assumes the presence of the standard radiator provided, taking into consideration the backpressure caused

Fuel system

Governor	 ECU
Governor steady state speed stability at constant load (ISO 8528-5 Class G3) ²	 ≤ +/- 0.5 %
Max. restriction at fuel inlet (Bar)	 0.1
Max. pressure at fuel inlet (Bar)	 0.5
Max. fuel return restriction (Bar)	 0.2
Max. fuel inlet temperature (°C)	 70
Fuel supply flow (L/hr)	 3400
Min. internal diameter of inlet pipe (mm)	 19
Min. internal diameter of return pipe (mm)	 19

Electrical system

Electrical system voltage (negative to ground) (Vdc)	 24
Starter power (kW)	 2 x 10
Battery charger current (A)	 55
Battery charger absorbed power (kW)	 1.6
Max. electric resistance of starting circuit (Ω)	 0.008
Min. sectional area of wire (mm²)	 2 x 95
Min. cold start temperature without auxiliary starting device (°C) ³	 -10
Min. cold start temperature with auxiliary starting device (°C) ³	 TBA

¹ The indicated value is based on the AOT value of 1°C for an engine tested at 100% of the ESP Power, reflecting temperature in an open condition, without an enclosure or container, without any airflow obstruction in the front of the radiator, without air recirculation, with free exhaust gas exit and with the engine thermostatic valve in its full open condition, without a closing plate present. The reference air restriction is equal to 50Pa. For the equivalent ATB (Air-to-Boil) performance in a customer or project basis, please consult Baudouin Application Engineering.

² This refers only to the frequency response of the engine and should not be confused with the performance class of the Generator Set, which is subject to additional contributing factors such as alternator selection and control settings.

³ Engines used in emergency standby application or applications that require immediate start under load, they must be equipped with coolant heaters. Baudouin recommend heaters installation to be executed by providing constant coolant circulation across all the engine components. Two heaters are required for V-type engines, one per each side.

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Noise

Diesel engine noise (Acoustic power level) (dB(A))	127.3
Noise - upper side (dB(A))	110.2
Noise - right side (view from flywheel) (dB(A))	108.0
Noise - left side (view from flywheel) (dB(A))	110.7
Noise – front (radiator) side (dB(A))	105.6
Noise – rear (flywheel) side (dB(A))	105.8

Notes :

- Noise test made at 100% of the ESP power, at 1 mt. distance, on engine without radiator, without cooling fan and without silencer.
- Noise test refers to ISO 6798 norm : "Reciprocating internal combustion engines. Measurement of emitted airborne noise. Engineering method and survey method".

Fuel consumption

Rating	gr/kWh	L/hr
100% ESP	206.8	887.5
100% PRP	212.5	834.6
75% PRP	222.8	656.5
50% PRP	233.3	458.3
25% PRP	269.7	264.9
Fuel consumption tolerance +/- 5%		

Notes:

This engine is designed for ESP (Emergency Standby) applications only, the values shown above at PRP levels refer to the Referenced Power (3300 kWm).

Ratings definitions

Emergency Standby Power (ESP)

Emergency Standby Power is the maximum power available for a varying load for the duration of a main power network failure. The average load factor over 24 hours of operation should not exceed 70% of the engine's ESP power rating. Typical operational hours of the engine is 200 hours per year, with a maximum usage of 500 hours per year. This includes an annual maximum of 25 hours per year at the ESP power rating. No overload capability is allowed. The engine is not to be used for sustained utility paralleling applications.

Prime Power (PRP)

Prime Power is the maximum power available for unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine's PRP power rating during any 24 hour period. An overload capability of 10% is available, however, this is limited to 1 hour within every 12 hour period.

- All ratings are based on operating conditions under ISO 8528-1, ISO 3046, DIN6271. Performance tolerance of $\pm 5\%$.
- Test conditions : 100 kPa, 25°C air inlet temperature, relative humidity of 30%, with fuel density 0.84 kg/L. Derating may be required for conditions outside these; please contact the factory for details.
- Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan and optional equipment.

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Engine Basic data

Engine model	16M55G8D2/6
Max. test power @1800rpm (kWm)	3600
N° of Cylinders / Valves	16 / 64
Cylinders arrangement	At Vee
Displacement (L)	87.5
Thermodynamic Cycle	Diesel 4 stroke
Cooling System	Liquid (water + 50% antifreeze)
Injection System	Direct
Fuel System	High Pressure Common Rail
Aspiration	Turbocharged and Aftercooled
Fuel type	Diesel

Test information

Test Date	01/11/21
Test Cell n°	B08
Test Procedure	ISO 8178 ⁽¹⁾

Measured data^{*(2)(3)}

Load % of ESP	Power (kWm)	Ambient Temp (°C)	Exhaust Temp (°C)	Exhaust Flow (kg/h)	Nox (g/kWh) / (mg/Nm ³)	HC (g/kWh) / (mg/Nm ³)	CO (g/kWh) / (mg/Nm ³)	PM (g/kWh) / (mg/Nm ³)
100%	3600	32.4	552	19396	7.6/ 2298.4	0.1/ 23.6	0.4/ 116.8	-/ -
75%	2701	32.4	481	17771	5.4/ 1531.2	0.1/ 35.7	0.4/ 108.1	-/ -
50%	1800	32.2	458	14281	4.5/ 1214.8	0.2/ 60	0.3/ 86	-/ -
25%	900	31.7	439	9501	4.1/ 937.2	0.6/ 115.5	0.5/ 128.5	-/ -
10%	360	31.2	351	6855	5.2/ 906.1	1.3/ 212.5	1.5/ 265.2	-/ -
Weighted Value					5.041/ -	0.367/ -	0.403/ -	0.09/ -

* Notes: 1. Steady-Stage emissions recorded per ISO8178-1 during operation at rated engine speed (+/-2%) and stated constant load (+/-2%) with engine temperatures, pressures and emission rates stabilized.

2. mg/Nm³ values are measured dry and corrected to 5% O₂ content.

3. This data was taken from a single engine test according to the Test Methods and Conditions specified. This data is subject to instrumentation, measurement, and engine-to-engine variability. Field emissions test data is not guarantee to these levels. For air permit programs, please contact Application Engineering for expected site variation.



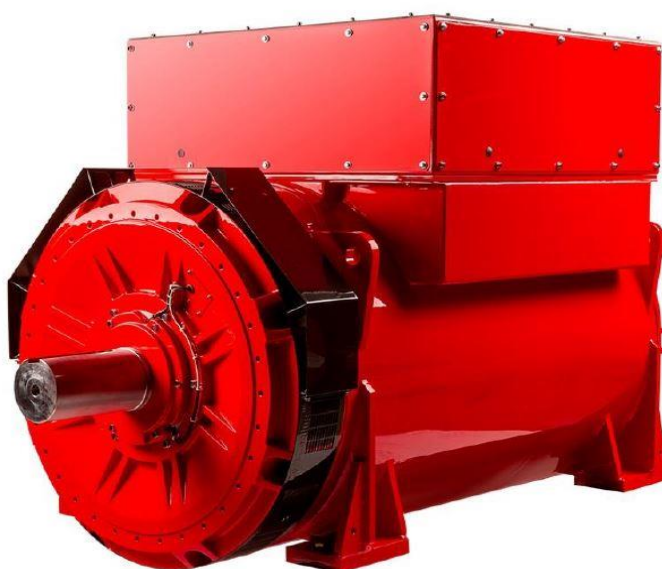
S9L1D-G4 Wdg.312 - Technical Data Sheet

Standards

STAMFORD industrial alternators meet the requirements of the relevant parts of the IEC 60034 and the relevant sections of other international standards such as BS5000-3, ISO 8528-3, VDE 0530, NEMA MG1-32, CSA C22.2-100 and AS 60034. Other standards and certifications can be considered on request.

Quality Assurance

Alternators are manufactured using production procedures having a quality assurance level to BS EN ISO 9001.



Excitation and Voltage Regulators

Excitation System					
AVR Type	DM110	DECS100	DECS150		
Voltage Regulation	± 0.25%	± 0.25%	± 0.25%		with 4% Engine Governing
AVR Power	PMG	PMG	PMG		

No Load Excitation Voltage (V)	12.8 - 11.4
No Load Excitation Current (A)	1.1 - 1
Full Load Excitation Voltage (V)	47
Full Load Excitation Current (A)	3.9
Exciter Time Constant (seconds)	0.34

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S9L1D-G4 Wdg.312

Electrical Data								
Insulation System	H							
Stator Winding	Double Layer Concentric							
Winding Pitch	2/3							
Winding Leads	6							
Winding Number	312							
Number of Poles	4							
IP Rating	IP23							
RFI Suppression	BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. Refer to factory for others							
Waveform Distortion	NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
Short Circuit Ratio	1/Xd							
Steady State X/R Ratio	29.45							
50 Hz					60 Hz			
Telephone Interference	THF<2%				TIF<50			
Cooling Air Flow	2.78 m³/sec				3.33 m³/sec			
Voltage Star (V)	380	400	415	440	416	440	460	480
Voltage Parallel Star (V)	-	-	-	-	-	-	-	-
Voltage Delta (V)	-	-	-	-	-	-	-	-
kVA Base Rating (Class H) for Reactance Values (kVA)	4035	4250	4250	3900	4419	4675	4887	5100
Saturated Values in Per Unit at Base Ratings and Voltages								
Xd Dir. Axis Synchronous	2.136	2.030	1.886	1.540	2.342	2.215	2.118	2.030
X'd Dir. Axis Transient	0.209	0.199	0.185	0.151	0.229	0.217	0.207	0.199
X''d Dir. Axis Subtransient	0.117	0.112	0.104	0.085	0.129	0.122	0.116	0.112
Xq Quad. Axis Reactance	1.183	1.125	1.045	0.853	1.298	1.227	1.174	1.125
X''q Quad. Axis Subtransient	0.134	0.127	0.118	0.096	0.147	0.139	0.133	0.127
XL Stator Leakage Reactance	0.062	0.059	0.055	0.045	0.068	0.064	0.062	0.059
X2 Negative Sequence Reactance	0.183	0.174	0.161	0.132	0.200	0.189	0.181	0.174
X0 Zero Sequence Reactance	0.066	0.063	0.058	0.048	0.072	0.068	0.065	0.063
Unsaturated Values in Per Unit at Base Ratings and Voltages								
Xd Dir. Axis Synchronous	2.563	2.436	2.263	1.847	2.810	2.657	2.542	2.436
X'd Dir. Axis Transient	0.240	0.228	0.212	0.173	0.263	0.249	0.238	0.228
X''d Dir. Axis Subtransient	0.137	0.131	0.121	0.099	0.151	0.142	0.136	0.131
Xq Quad. Axis Reactance	1.219	1.159	1.076	0.879	1.337	1.264	1.209	1.159
X''q Quad. Axis Subtransient	0.160	0.152	0.142	0.116	0.176	0.166	0.159	0.152
XL Stator Leakage Reactance	0.070	0.067	0.062	0.051	0.077	0.073	0.070	0.067
Xlr Rotor Leakage Reactance	0.070	0.067	0.062	0.051	0.077	0.073	0.070	0.067
X2 Negative Sequence Reactance	0.219	0.208	0.194	0.158	0.240	0.227	0.217	0.208
X0 Zero Sequence Reactance	0.077	0.073	0.068	0.056	0.085	0.080	0.076	0.073

STAMFORD

S9L1D-G4 Wdg.312

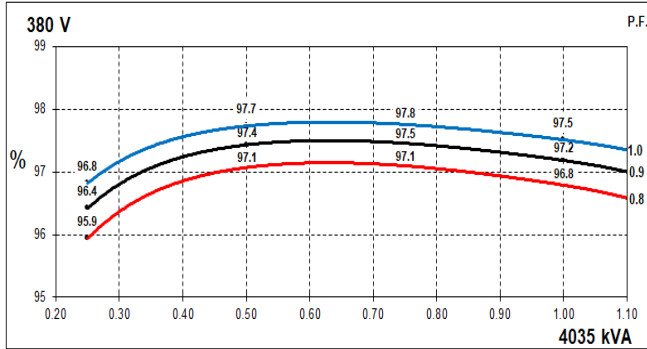
Time Constants (Seconds)		
T'd Transient Time Const.	0.372	
T''d Sub-Transient Time Const.	0.017	
T'do O.C. Field Time Const.	4.175	
Ta Armature Time Const.	0.026	
T''q Sub-Transient Time Const.	0.011	
Resistances in Ohms (Ω) at 22 ⁰ C		
Stator Winding Resistance (Ra), per phase for series connected	0.0002306	
Rotor Winding Resistance (Rf)	0.829	
Exciter Stator Winding Resistance	11.2	
Exciter Rotor Winding Resistance per phase	0.016	
PMG Phase Resistance (Rp _{mg}) per phase	1.91	
Positive Sequence Resistance (R1)	0.00029	
Negative Sequence Resistance (R2)	0.00033	
Zero Sequence Resistance (R0)	0.00029	
Saturation Factors	400V	480V
SG1.0	0.239	0.239
SG1.2	1.126	1.135
Mechanical Data		
Shaft and Keys	All alternator rotors are dynamically balanced to better than ISO 21940-11 Grade 2.5 for minimum vibration in operation. Two bearing generators are balanced with a half key.	
	1 Bearing	2 Bearing
SAE Adaptor		00, None
Moment of Inertia	-	130.1 kgm²
Weight Wound Stator	-	4193kg
Weight Wound Rotor	-	2931kg
Weight Complete Alternator	-	8250kg
Shipping weight in a Crate	-	8686kg
Packing Crate Size	-	300 x 200 x 220(cm)
Maximum Over Speed	2250 RPM for two minutes	
Bearing Drive End	-	NU1036
Bearing Non-Drive End	-	6328

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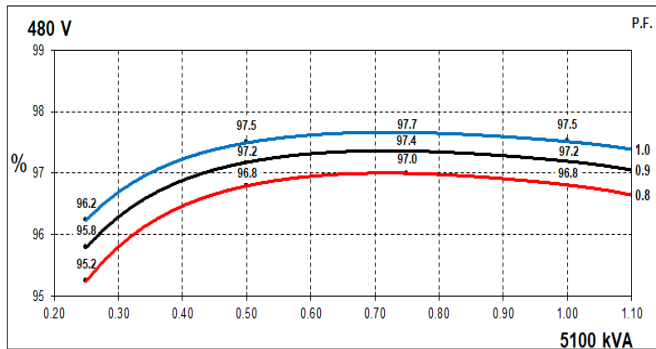
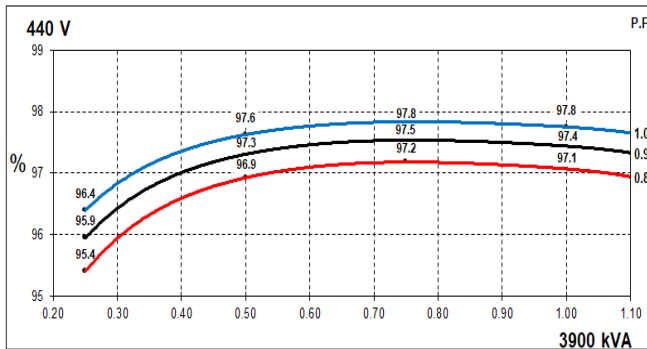
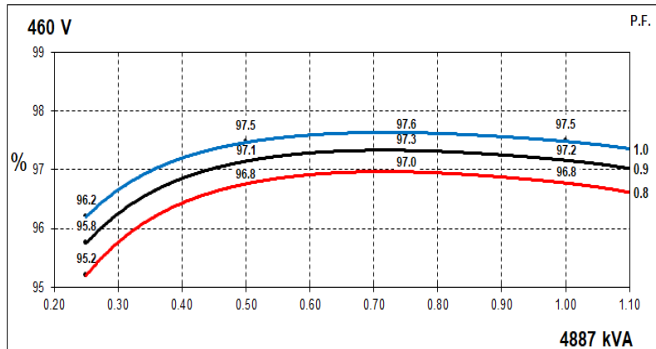
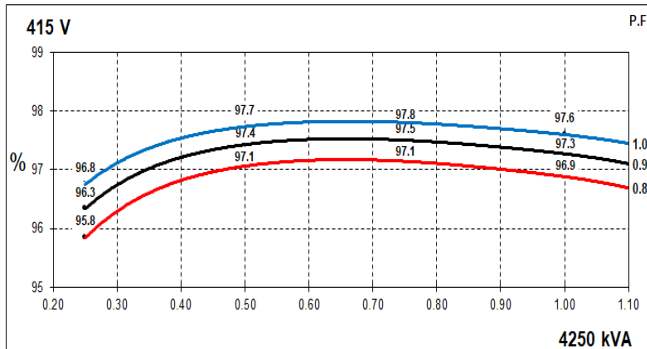
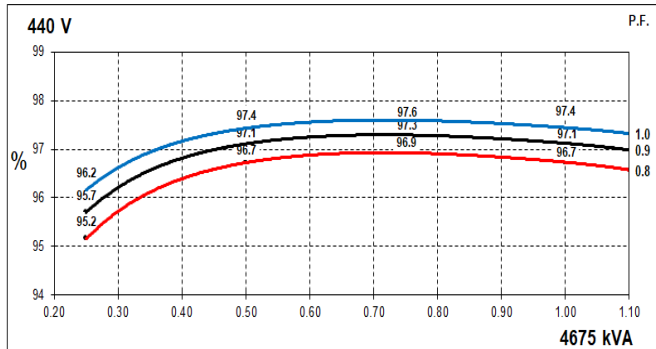
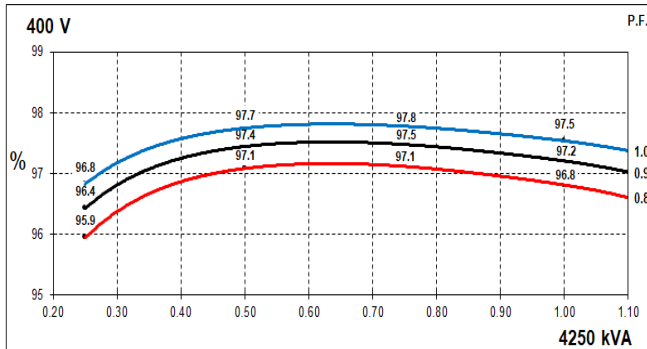
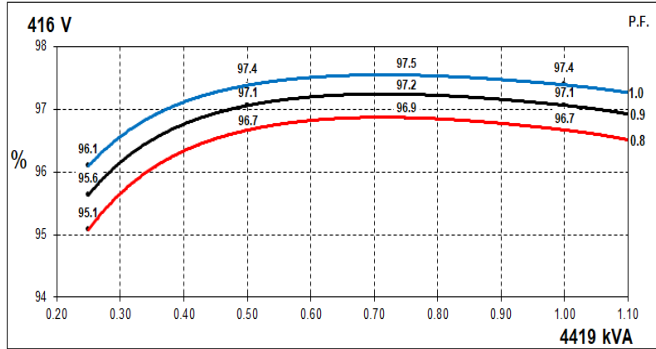
S9L1D-G4 Wdg.312

THREE PHASE EFFICIENCY CURVES

50Hz



60Hz

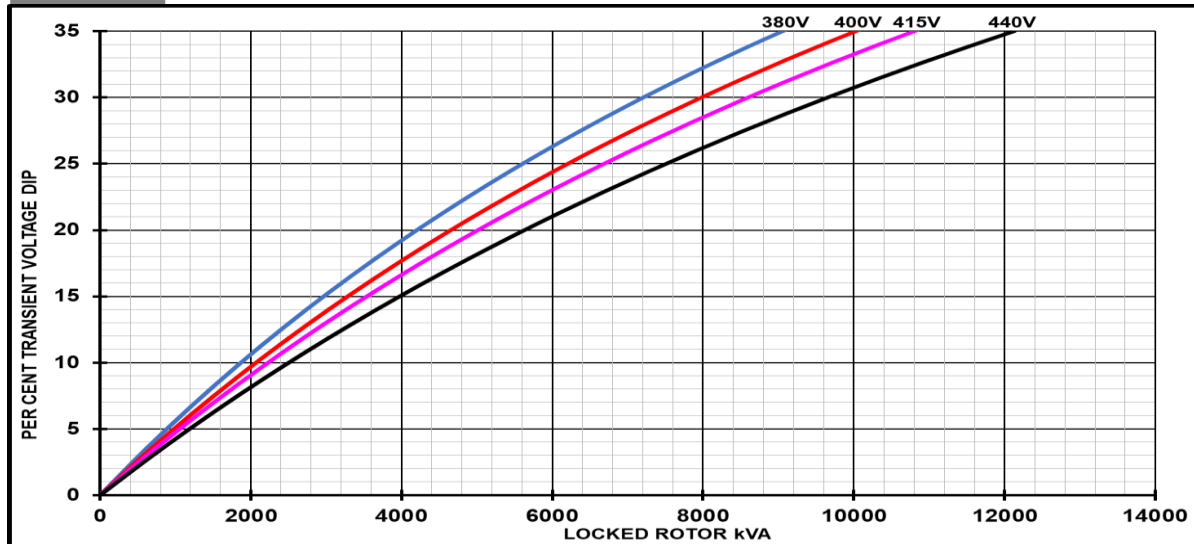


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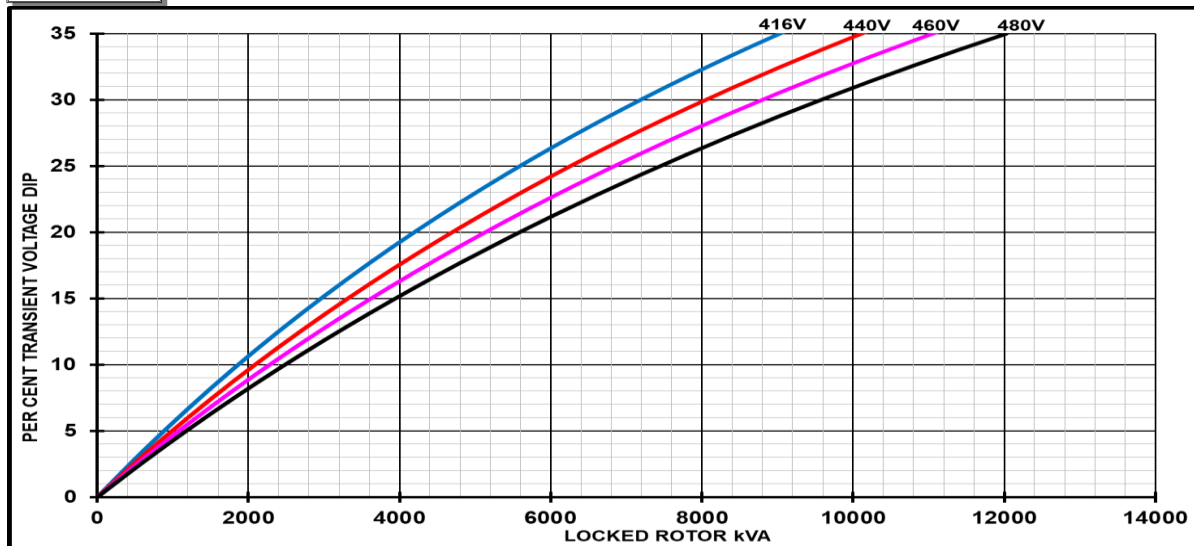
S9L1D-G4 Wdg.312

Locked Rotor Motor Starting Curves - Separately Excited

50Hz



60Hz



Transient Voltage Dip Scaling Factor		Transient Voltage Rise Scaling Factor	
Lagging PF	Scaling Factor	Lagging PF	Scaling Factor
<= 0.4	1.00	<= 0.4	1.25
0.5	0.95	0.5	1.20
0.6	0.90	0.6	1.15
0.7	0.86	0.7	1.10
0.8	0.83	> 0.7	1.00
0.9	0.75		
0.95	0.70		
1	0.65		

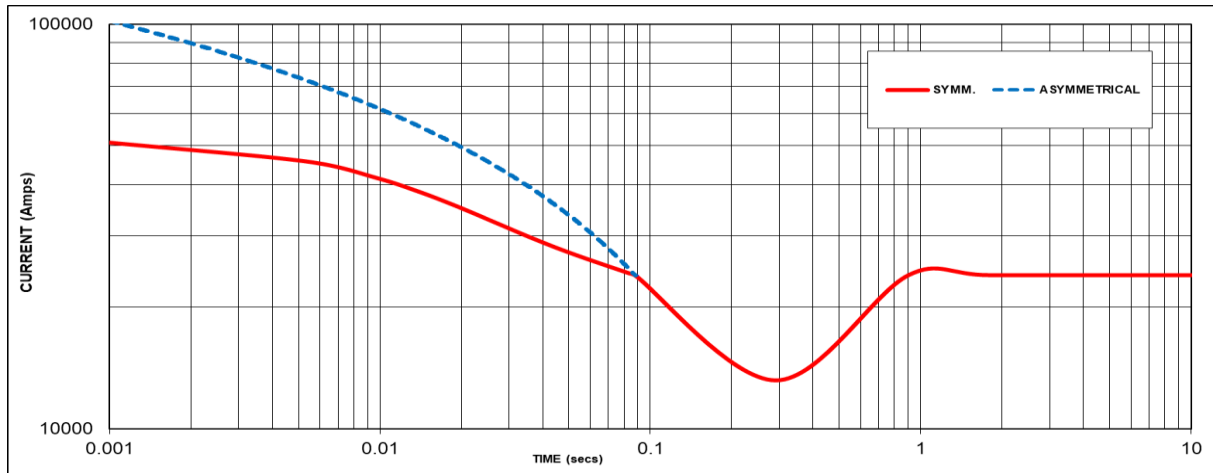
Note: To determine % Transient Voltage Dip or Voltage Rise at various PF, multiply the % Voltage Dip from the curve directly by the Scaling Factor.

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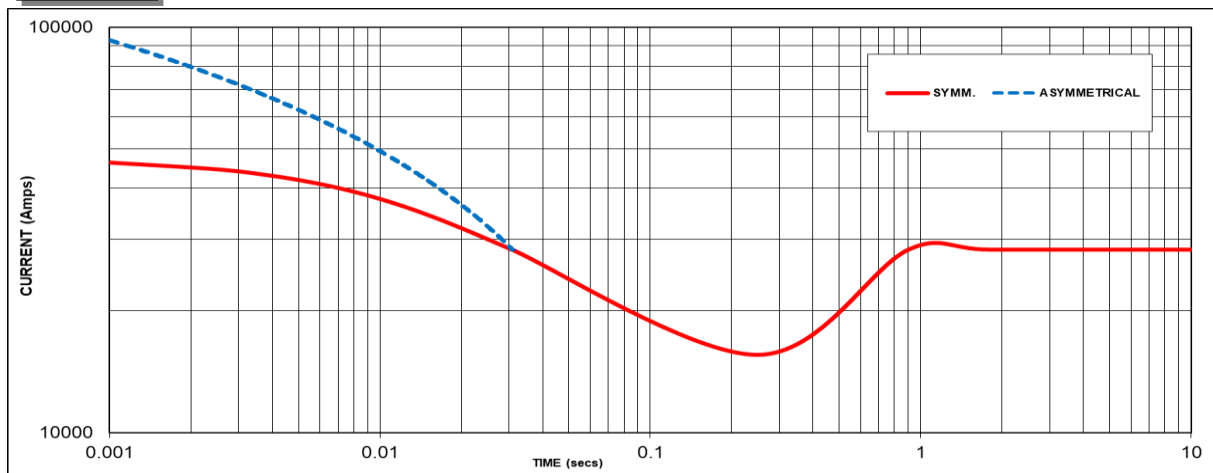
Three-phase Short Circuit Decrement Curve - Separately Excited

50Hz



Sustained Short Circuit = 23943 Amps

60Hz



Sustained Short Circuit = 28292 Amps

Note 1

The following multiplication factors should be used to adjust the values from curve between time 0.001 seconds and the minimum current point in respect of nominal operating voltage :

50Hz		60Hz	
Voltage	Factor	Voltage	Factor
380V	X 1.00	416V	X 1.00
400V	X 1.05	440V	X 1.06
415V	X 1.09	460V	X 1.11
440V	X 1.16	480V	X 1.15

The sustained current value is constant irrespective of voltage level

Note 2

The following multiplication factor should be used to convert the values calculated in accordance with NOTE 1 to those applicable to the various types of short circuit :

	3-phase	2-phase L-L	1-phase L-N
Instantaneous	x 1.00	x 0.87	x 1.30
Minimum	x 1.00	x 1.80	x 3.20
Sustained	x 1.00	x 1.50	x 2.50
Max. sustained duration	10 sec.	5 sec.	2 sec.

Note 3

All other times are unchanged

Curves are drawn for Star connections under no-load excitation at rated speeds. For other connection (where applicable) the following multipliers should be applied to current values as shown :

Parallel Star = Curve current value X 2

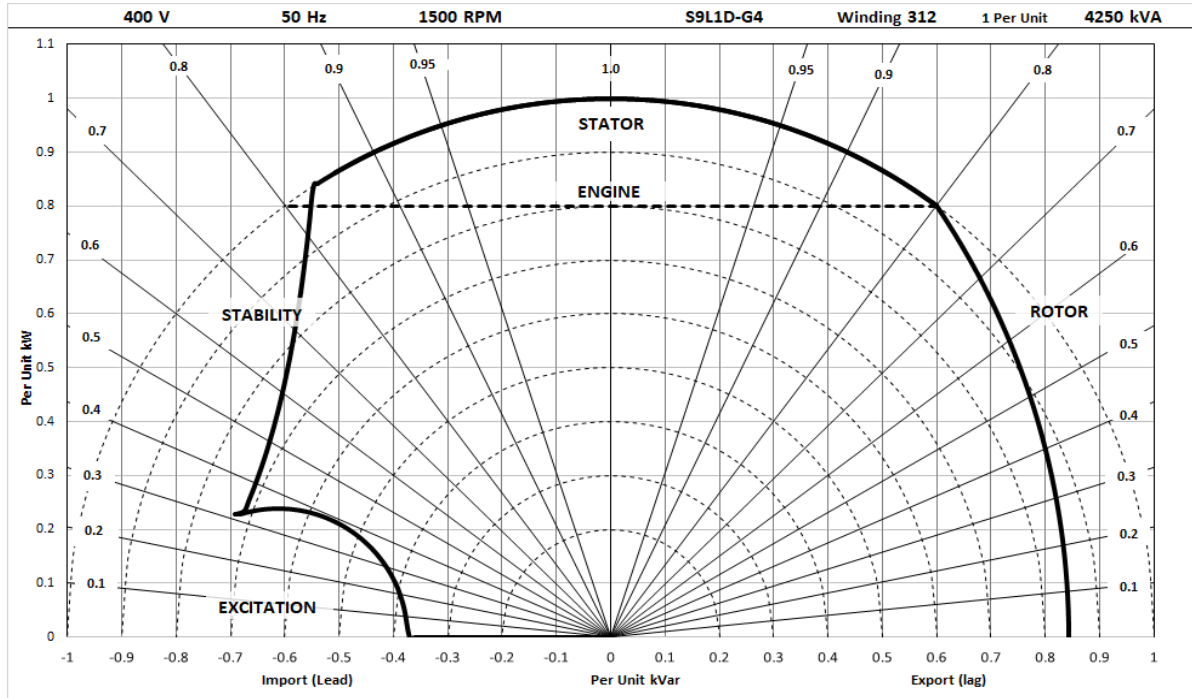
Series Delta = Curve current value X 1.732

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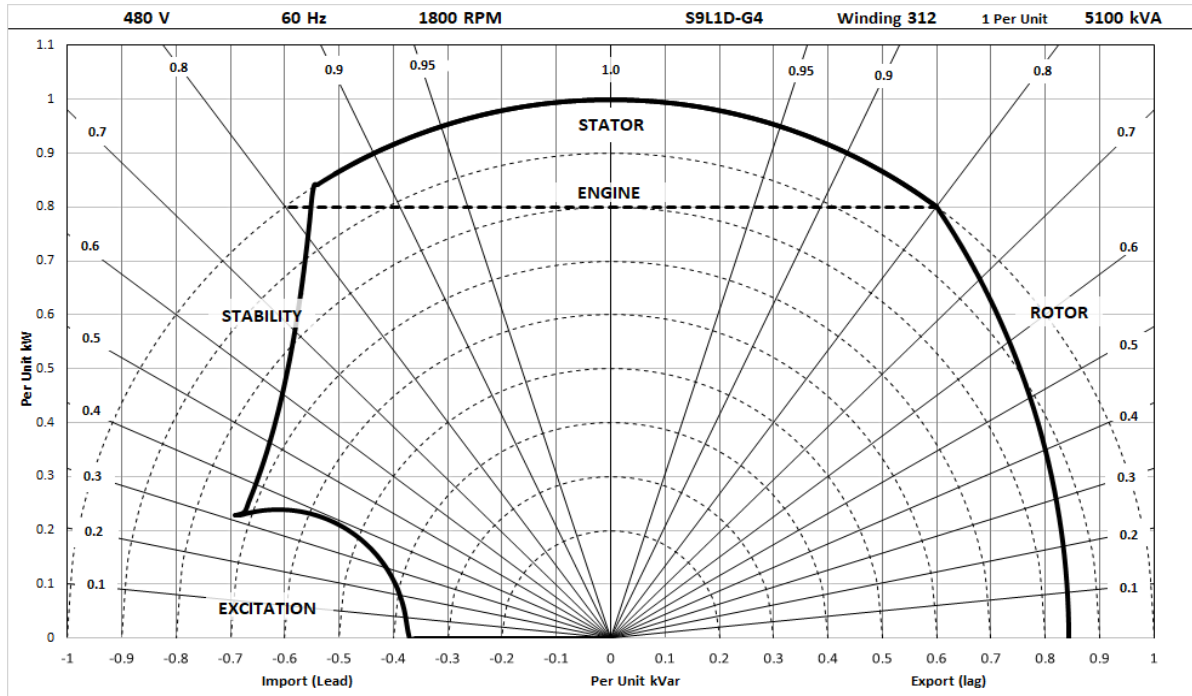
S9L1D-G4 Wdg.312

Typical Alternator Operating Charts

400V/50Hz



480V/60Hz



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S9L1D-G4 Wdg.312

RATINGS AT 0.8 POWER FACTOR

Class - Temp Rise		Standby - 150/40°C				Cont. H - 125/40°C				Cont. F - 105/40°C				Cont. B - 80/40°C			
50 Hz	Star (V)	380	400	415	440	380	400	415	440	380	400	415	440	380	400	415	440
	Parallel Star (V)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Delta (V)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	kVA	4175	4400	4400	4040	4035	4250	4250	3900	3710	3910	3910	3590	3230	3400	3400	3120
	kW	3340	3520	3520	3232	3228	3400	3400	3120	2968	3128	3128	2872	2584	2720	2720	2496
	Efficiency (%)	96.7	96.7	96.8	97.0	96.8	96.8	96.9	97.1	96.9	96.9	97.0	97.1	97.1	97.1	97.1	97.2
	kW Input	3453	3638	3635	3331	3335	3512	3509	3214	3062	3227	3225	2957	2662	2802	2801	2568

60 Hz	Star (V)	416	440	460	480	416	440	460	480	416	440	460	480	416	440	460	480
	Parallel Star (V)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Delta (V)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	kVA	4575	4838	5062	5275	4419	4675	4887	5100	4063	4300	4494	4688	3531	3738	3906	4075
	kW	3660	3870	4050	4220	3535	3740	3910	4080	3250	3440	3595	3750	2825	2990	3125	3260
	Efficiency (%)	96.6	96.7	96.7	96.8	96.7	96.7	96.8	96.8	96.8	96.8	96.9	96.9	96.8	96.9	97.0	97.0
	kW Input	3788	4003	4187	4361	3657	3866	4040	4214	3359	3553	3711	3870	2917	3086	3223	3361

De-rates

All values tabulated above are subject to the following reductions:

- 5% when air inlet filters are fitted
- 3% for every 500 meters by which the operating altitude exceeds 1000 meters above mean sea level
- 3% for every 5°C by which the operational ambient temperature exceeds 40°C @ Class H temperature rise (please refer to applications for ambient temperature de-rates at other temperature rise classes)
- For marine alternators, 3% for every 5°C by which the operational ambient temperature exceeds 50°C
- For any other operating conditions impacting the cooling circuit please refer to applications

Note: Requirement for operating in an ambient exceeding 60°C and altitude exceeding 4000 meters (for <690V) or 1500 meters (for >690V) must be referred to applications.

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/>)

Note: Continuous development of our products means that the information contained in our data sheets can change without notice, and specifications should always be confirmed with Cummins Generator Technologies prior to purchase.



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PRODUCT-DETAILS

E6.2H 5000 Ekip Dip LSIG 3p F HR

E6.2H 5000 Ekip Dip LSIG 3p F HR



Información General	
Tipo de producto extendido	E6.2H 5000 Ekip Dip LSIG 3p F HR
Código de producto	1SDA071263R1
EAN	8015644751135
Descripción corta	E6.2H 5000 Ekip Dip LSIG 3p F HR
Descripción larga	C.BREAKER SACE EMAX2 E6.2H 5000 FIXED THREE-POLE WITH TERMINALS REAR HORIZONTAL AND SOLID-STATE RELEASE IN AC Ekip/DIP-LSIG R 5000 FITTED WITH: 4 AUXILIARY CONTACT AND C.BREAKER IN POSITION OPEN-CLOSED

ABB EcoSolutions	
ABB EcoSolutions	Sí
Emplazamiento ABB cumpliendo el objetivo de residuos al vertedero	UL 2799 Validación de cero residuos a vertederos disponible
Instrucciones de desmontaje al final de la vida útil	9AKK108468A2364
Declaración Ambiental de Producto - EPD	9AKK108468A1905 9AKK108468A1913

Tasa de reciclabilidad del
producto según
EN45555

Diseño para cerrar ciclos de recursos - Norma EN45555 - 77 %

Cumplimiento de Materiales

Declaración REACH	9AKK108466A1425
Información sobre RoHS	9AKK108466A1424
Estado de RoHS	Siguiendo la Directiva de la UE 2011/65/UE y la Enmienda 2015/863 22 de julio de 2019
Plantilla de notificación de minerales de conflicto (CMRT)	9AKK108467A5658
Ley de Control de Sustancias Tóxicas - TSCA	9AKK108467A8326
SCIP	5db9272f-d385-4a4a-a0e6-73274e7613b2 Italy

Ambiente

Información medioambiental	9AKK108467A6707
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Clasificación

Código de pedido EE.UU. y Canadá	Z6HXESBC000A000000XX
EAN	8015644751135
Cantidad mínima de pedido	1 piece
Código arancelario	85362090

Dimensiones

Ancho del product	762 mm
Alto del producto	371 mm
Largo del product	270 mm
Peso del product	109 kg

Información de Embalaje

Embalaje Nivel 1 Unidades	caja 1 piece
Embalaje Nivel 1 Ancho	515 mm
Embalaje Nivel 1 Alto	610 mm
Embalaje Nivel 1 Largo	1000 mm
Embalaje Nivel 1 Peso	118 kg
Embalaje Nivel 1 EAN	8015644751135

Información Adicional

Tipo de producto principal	SACE Emax 2
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Nombre del producto	Air Circuit Breaker
Tipo de producto	Air Circuit Breaker
Versión	F
Dibujo dimensional CAD	1SDH001252R0223

Técnica

Tipo actual	AC
Durabilidad eléctrica	Ue =< 440 V 3000 cycle Ue = 500 ... 690 V 2000 cycle 10 cycles per hour
Durabilidad mecánica	12000 cycle 60 cycles per hour
Número de polos	3P
Pérdida de potencia	483 W
Corriente nominal (I _N)	5000 A
Tensión nominal soportada por impulsos (U _{imp})	acc. to IEC 60947-2 12 kV
Tensión nominal de aislamiento (U _i)	CA 1000 V
Tensión nominal de operación	690 V AC
Capacidad nominal de corte en cortocircuito en servicio (I _{CS})	(220 V AC) 100 kA (230 V AC) 100 kA (380 V AC) 100 kA (400 V AC) 100 kA (415 V AC) 100 kA (440 V AC) 100 kA (500 V AC) 100 kA (660 V AC) 100 kA (690 V AC) 100 kA
Capacidad nominal de corte en cortocircuito, en % de I _{cu} (I _{CS})	100 %
Corriente nominal de corta duración Tensión baja (I _{CB})	durante 1 s 100 kA durante 3 s 100 kA
Capacidad nominal de corte en cortocircuito (I _{cu})	(400 V AC) 100 kA (415 V AC) 100 kA (440 V AC) 100 kA (500 V AC) 100 kA (525 V AC) 100 kA (690 V AC) 100 kA
Corriente nominal ininterrumpida (I _u)	5000 A
Tensión nominal (U _r)	690 V
Destornillador recomendado	Main Circuit M12
Liberar	Ekip Dip LSIG
Tipo de desbloqueo	EL
Nivel de rendimiento de cortocircuito	H
Normas	IEC
Subtipo	E6.2
Suitable for IT Networks	Yes, 690V
Tipo de conexión del terminal	Trasero plano Horizontal
Tipo de terminal	Cerrojo
Par de apriete	70 N·m

Certificados y Declaraciones (Número de Documento)

Certificado ATEX	No certification needed
Certificado CSA	No certification needed
Certificado CSA (seguridad intrínseca)	No certification needed
Ficha técnica, información técnica	1SDC200023D0709
Declaración de conformidad - CE	9AKK106713A5544
Certificado UL	No certification needed
Certificado VDE	No certification needed
Dibujos mecánicos	1SDH001060R0100
Diagrama de cableado	1SDM000091R0001
Instrucciones y manuales	1SDH001000R0005

Clasificaciones y estándares externos

ETIM 9	EC000228 - Power circuit-breaker for trafo/generator/installation protection
ETIM 10	EC000228 - Power circuit-breaker for trafo/generator/installation protection
Código de categoría granular de IDEA (IGCC)	4926 >> Air circuit breakers
Código de clasificación de objetos	Q
UNSPSC	39121615
Categoría RAEE	4. Equipo grande (cualquier dimensión externa de más de 50 cm)
Clase electrónica	V11.1 : 27370409

Categorías

Productos y sistemas de baja tensión → Interruptores automáticos → Interruptores automáticos de bastidor abierto → Emax 2





PRODUCT-DETAILS

E4.2H 4000 Ekip Dip LSI 3p F HR

E4.2H 4000 Ekip Dip LSI 3p F HR



General Information	
Extended Product Type	E4.2H 4000 Ekip Dip LSI 3p F HR
Product ID	1SDA071212R1
EAN	8015644750626
Catalog Description	E4.2H 4000 Ekip Dip LSI 3p F HR
Long Description	C.BREAKER SACE EMAX2 E4.2H 4000 FIXED THREE-POLE WITH TERMINALS REAR HORIZONTAL AND SOLID-STATE RELEASE IN AC EKIP/DIP-LSI R 4000 FITTED WITH: 4 AUXILIARY CONTACT AND C.BREAKER IN POSITION OPEN-CLOSED

ABB EcoSolutions	
ABB EcoSolutions	Yes
ABB Site Meeting Group Waste To Landfill Target	UL 2799 Zero Waste To Landfill Validation available
End Of Life Disassembling Instructions	9AKK108468A2363
Environmental Product Declaration - EPD	9AKK108468A1904 9AKK108468A1910
Extended Product	Lifetime Extension Services are Offered

Lifetime

Recyclability Rate of the Product acc. to EN45555	Design for Closing Resource Loops - Standard EN45555 - 79.3 %
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Material Compliance

REACH Declaration	9AKK108466A1425
RoHS Declaration	9AKK108466A1424
RoHS Information	Following EU Directive 2011/65/EU and Amendment 2015/863 July 22, 2019
Conflict Minerals Reporting Template (CMRT)	9AKK108467A5658
Toxic Substances Control Act - TSCA	9AKK108467A8326
SCIP	5db9272f-d385-4a4a-a0e6-73274e7613b2 Italy

Environmental

Environmental Information	9AKK108467A6707
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Ordering

Order Code US and Canada	Z4HWERBB000A000000XX
EAN	8015644750626
Minimum Order Quantity	1 piece
Customs Tariff Number	85362090

Dimensions

Product Net Width	384 mm
Product Net Height	371 mm
Product Net Depth / Length	270 mm
Product Net Weight	56 kg

Container Information

Package Level 1 Units	box 1 piece
Package Level 1 Width	515 mm
Package Level 1 Height	610 mm
Package Level 1 Depth / Length	615 mm
Package Level 1 Gross Weight	63 kg
Package Level 1 EAN	8015644750626

Additional Information

Product Main Type	SACE Emax 2
Product Name	Air Circuit Breaker
Product Type	Air Circuit Breaker

Version	F
CAD Dimensional Drawing	1SDH001252R0171

Technical

Connecting Capacity	4000 mm ²
Current Type	AC
Electrical Durability	Ue ≤ 440 V 5000 cycle Ue = 500 ... 690 V 4000 cycle 20 cycles per hour
Mechanical Durability	15000 cycle 60 cycles per hour
Number of Poles	3P
Power Loss	465 W
Rated Current (I _N)	4000 A
Rated Impulse Withstand Voltage (U _{imp})	acc. to IEC 60947-2 12 kV
Rated Insulation Voltage (U _i)	AC 1000 V
Rated Operational Voltage	690 V AC
Rated Service Short-Circuit Breaking Capacity (I _{cs})	(220 V AC) 100 kA (230 V AC) 100 kA (380 V AC) 100 kA (400 V AC) 100 kA (415 V AC) 100 kA (440 V AC) 100 kA (500 V AC) 85 kA (660 V AC) 85 kA (690 V AC) 85 kA
Rated Service Short-Circuit Breaking Capacity, in % of I _{cu} (I _{cs})	100 %
Rated Short-time Withstand Current Low Voltage (I _{cw})	for 1 s 85 kA for 3 s 75 kA
Rated Ultimate Short-Circuit Breaking Capacity (I _{cu})	(400 V AC) 100 kA (415 V AC) 100 kA (440 V AC) 100 kA (500 V AC) 85 kA (525 V AC) 85 kA (690 V AC) 85 kA
Rated Uninterrupted Current (I _u)	4000 A
Rated Voltage (U _r)	690 V
Recommended Screw Driver	M12
Release	Ekip Dip LSI
Release Type	EL
Short-Circuit Performance Level	H
Standards	IEC
Sub-type	E4.2
Suitable for IT Networks	Yes, 690V
Terminal Connection Type	Rear flat Horizontal
Terminal Type	Bolt
Tightening Torque	70 N·m

Certificates and Declarations

ATEX Certificate	No certification needed
CSA Certificate	No certification needed
CSA Certificate (Intrinsic Safe)	No certification needed
Data Sheet, Technical Information	1SDC200023D0209
Declaration of Conformity - CE	9AKK106713A5545
EU Data Act Compliance Declaration	1SDH002560A1001
UL Certificate	No certification needed
VDE Certificate	No certification needed
Mechanical Drawings	1SDH001001R0100
Wiring Diagram	1SDM000091R0001
Instructions and Manuals	1SDH001000R0002

External Classifications and Standards

ETIM 9	EC000228 - Power circuit-breaker for trafo/generator/installation protection
ETIM 10	EC000228 - Power circuit-breaker for trafo/generator/installation protection
IDEA Granular Category Code (IGCC)	4926 >> Air circuit breakers
Object Classification Code	Q
UNSPSC	39121615
WEEE Category	5. Small Equipment (No External Dimension More Than 50 cm)
eClass	V11.1 : 27370409

Categories

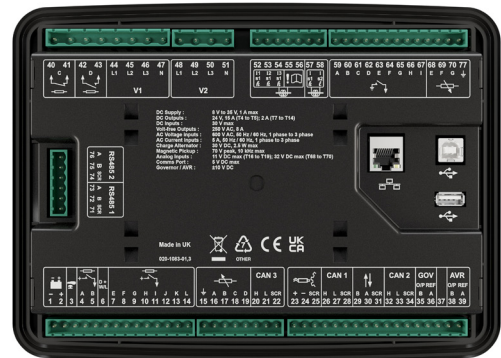
Low Voltage Products and Systems → Circuit Breakers → Air Circuit Breakers → Emax 2





DSEG8600 Parallel Genset Controller with Integral Heater

Part Number: G8600-01



Overview

The DSEG8600 is a parallel genset controller with integral heater designed for complex paralleling applications. The DSEG8600 can be configured to provide paralleling for up to 4,032 generators on a single site and provides a wide range of high-end features for multiple application environments. The module is configurable for use as a single-set controller, multi-set controller, mains (utility) controller or group controller.

Common Key Features

- 4 module applications in one product (single-set, multi-set, mains (utility) and group)
- Flexible bus segments
- Slip sync and sync (phase) lock synchronising control
- Advanced multi-set communication (AMSC) link with optional redundancy
- Shared virtual inputs, outputs and data via AMSC
- Advanced PLC functionality including multi-purpose PIDs
- Flexible inputs and outputs
- DSENet® expansion support
- PC configuration using DSE Configuration Suite
- Multiple language support
- Enhanced 6-line high-resolution heated display (240 px x 128 px) with on screen application diagrams
- Integrated gasket (IP65 protection)
- 2 integrated RS485 ports providing Modbus RTU support
- Integrated Ethernet port providing Modbus TCP and SNMP v2c support
- Data logging of up to 20 parameters
- Multi-level PIN protected front panel editor
- Manual front panel and automatic control modes

Product Documentation

053-256 – DSEG8600 Installation Instructions

057-323 – DSEG8600 Operator Manual

057-322 – DSEG8600 Configuration Suite PC Manual

053-253 – DSEG8660 Installation Instructions

057-324 – DSEG8660 Operator Manual

057-325 – DSEG8660 Configuration Suite PC Manual



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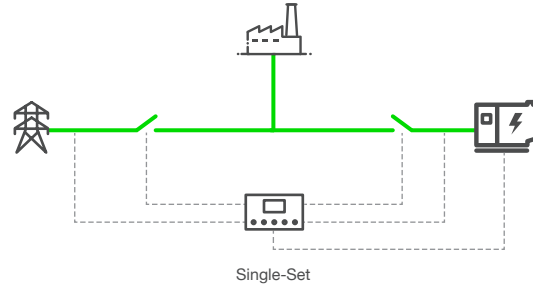
DSEG8600 Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Single-Set Controller Key Features

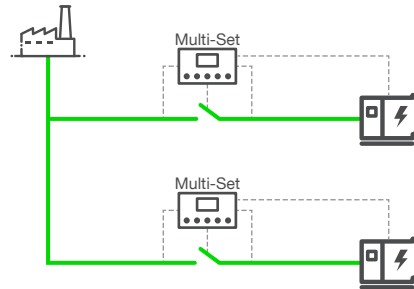
- Single generator, single mains (utility), synchronising ATS with short / long-term parallel control
- 3 phase generator and mains (utility) sensing with protection
- Mains (utility) failure detection including mains (utility) decoupling detection
- Based load and peak lopping / shaving control
- Latest ECU / ECM support for a wide range of engine manufacturers
- Integrated governor and AVR control
- Mains (utility) and generator positive, negative and zero voltage sequence alarms

Typical Applications



Multi-Set Controller Key Features

- Multiple generator synchronising and droop / isochronous loadsharing control
- 3 phase generator and bus sensing with protection
- Latest ECU / ECM support for a wide range of engine manufacturers
- Advanced load demand schemes including spinning reserve / capacity and balance engine hours
- Integrated governor and AVR control
- Dead bus synchronising
- Generator and bus positive, negative and zero voltage sequence alarms



*When used with multi-set controllers

Product Documentation

053-256 – DSEG8600 Installation Instructions

057-323 – DSEG8600 Operator Manual

057-322 – DSEG8600 Configuration Suite PC Manual

053-253 – DSEG8660 Installation Instructions

057-324 – DSEG8660 Operator Manual

057-325 – DSEG8660 Configuration Suite PC Manual



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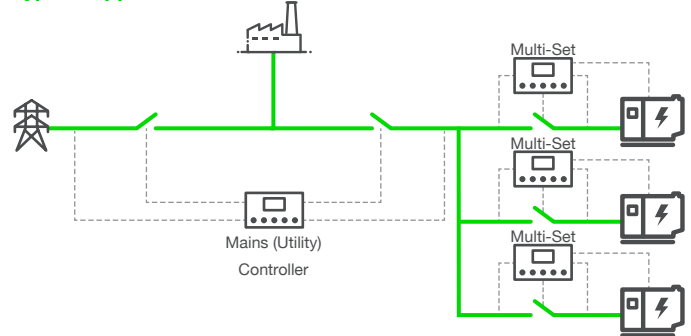
DSEG8600 Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Mains (Utility) Controller Key Features

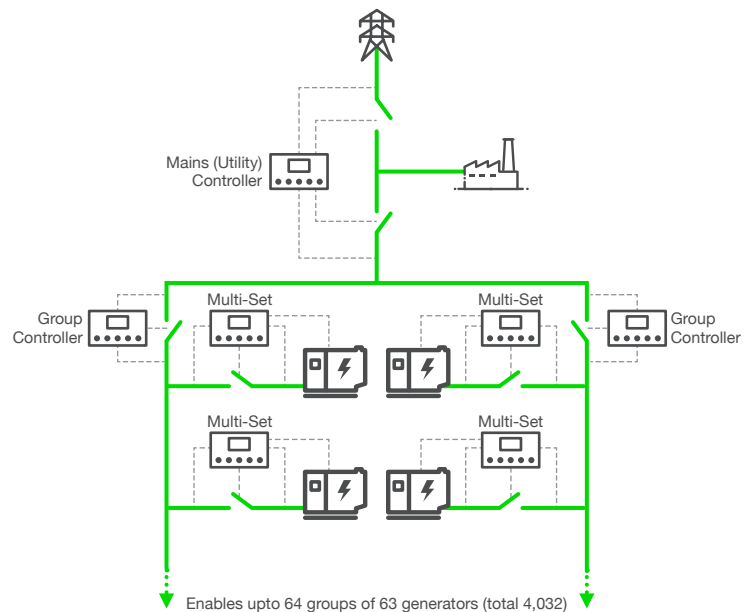
- Multiple mains (utility) and bus synchronising ATS with short / long-term parallel control*
- 3 phase mains (utility) and bus sensing with protection
- Mains (utility) failure detection including mains (utility) decoupling detection
- Based load and peak lopping / shaving control*
- Mains (utility) and bus positive, negative and zero voltage sequence alarms

Typical Applications



Group Controller Key Features

- Enables up to 64 groups of 63 generators (total 4,032) to synchronise and loadshare*
- 3 phase group (of generators) and bus sensing with protection
- Advanced load demand schemes including spinning reserve / capacity and balance engine hours*



*When used with multi-set controllers

Product Documentation

053-256 – DSEG8600 Installation Instructions

057-323 – DSEG8600 Operator Manual

057-322 – DSEG8600 Configuration Suite PC Manual

053-253 – DSEG8660 Installation Instructions

057-324 – DSEG8660 Operator Manual

057-325 – DSEG8660 Configuration Suite PC Manual



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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Specifications	
DC Supply	
Continuous Voltage Rating	8 V to 35 V DC continuous
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. Backlight will not be maintained during cranking.
Maximum Operating Current	700 mA at 12 V, 350 mA at 24 V
Maximum Standby Current	350 mA at 12 V, 190 mA at 24 V
Charge Alternator Excitation / Fail Range	0 V to 35 V
Voltage Measurement	
Number	2
Measurement Inputs	3 Phase + Neutral Single-Set Controller: Generator and Mains (Utility) Multi-Set Controller: Generator and Bus Mains (Utility) Controller: Mains (Utility) and Bus Group Controller: Group and Bus
Voltage Range	15 V to 415 V Phase to Neutral 25 V to 719 V Phase to Phase
Frequency Range	3.5 Hz to 75 Hz
Current Transformer Measurement	
Number	5
Measurement Inputs	3 Phase with Earth Fault, and Single Phase Single-Set Controller: 3 Phase Generator Current with Earth Fault Current + Single Phase Mains (Utility) Current Multi-Set Controller: 3 Phase Generator Current with Earth Fault Current Mains (Utility) Controller: 3 Phase Mains (Utility) Current + Single Phase Bus/Load Current Group Controller: 3 Phase Group Current
Current Range	0 A to 1 A 0 A to 5 A

Product Documentation

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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Specifications	
Analogue Inputs	
Number	Mains (Utility) and Group Controller: 0 Single-Set and Multi-Set Controller: 7
Type	Negative Switching Digital Input, Resistive Analogue Input, Current Analogue Input or Voltage Analogue Input
Digital Input Closed Voltage Threshold	Less than 2.1 V
Digital Input Open Voltage Threshold	Greater than 6.6 V
Resistive Analogue Measurement Range	Input A: 0 Ω to 3 k Ω Input B to G: 0 Ω to 5 k Ω
Current Analogue Measurement Range	0 mA to 20 mA
Voltage Analogue Measurement Range	Input A to G: 0 V to 10 V Input E to G: 0 V to 32 V
Analogue Resolution	1 %
Analogue Accuracy	2 %
Digital Inputs	
Number	9
Type	Negative Switching Digital Input
Closed Voltage Threshold	Less than 2.1 V
Open Voltage Threshold	Greater than 6.6 V
Emergency Stop Input	
Number	Mains (Utility) and Group Controller: 0 Single-Set and Multi-Set Controller: 1
Type	Positive Switching Digital Input
Closed Voltage Threshold	Greater than 5.0 V
Open Voltage Threshold	Less than 3.0 V
Magnetic Pick-up Input	
Voltage Input Range	0.5 V _{Peak} to 70 V _{Peak}
Frequency Input Range	1 Hz to 10 kHz
Resolution	6.25 RPM
Accuracy	± 25 RPM

Product Documentation

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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Specifications	
Analogue Outputs	
Number	Mains (Utility) and Group Controller: 0 Single-Set and Multi-Set Controller: 2
Type	Current Analogue Output or Voltage Analogue Output
Function	Governor and AVR control
Current Analogue Range	0 mA to 20 mA
Voltage Analogue Range	-10 V to 10 V
Analogue Resolution	1 %
Load Impedance	Current Analogue Output: Maximum 500 Ω Voltage Analogue Output: Minimum 500 Ω
Isolation	Governor: ± 1 kV AVR: ± 3 kV
Digital Outputs	
Number	Mains (Utility) and Group Controller: 8 Single-Set and Multi-Set Controller: 12
Type	Mains (Utility) and Group Controller: 1 Normally Open Volt-Free Contacts 1 Normally Closed Volt-Free Contacts 6 Positive Switching DC Output Single-Set and Multi-Set Controller: 1 Normally Open Volt-Free Contacts 1 Normally Closed Volt-Free Contacts 10 Positive Switching DC Output
Volt-Free Contact Output Rating	5 A _{DC} resistive at 30 V _{DC} 8 A _{AC} resistive at 250 V _{AC}
Positive DC Output Rating	Output A to B (Fuel and Start): 15 A _{DC} at Emergency Stop input supply voltage Output E to L: 2 A _{DC} at module supply voltage

Product Documentation

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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Specifications	
Communications	
USB A	1 Data Storage Port
USB B	1 Programming Port
DSENet®	1 Expansion Port
RS485	2 Fully Isolated RS485 Ports
Ethernet	1 10/100 Ethernet Port
CAN	3 Fully Isolated CAN Ports Single-Set Controller: CAN 1 – Engine ECU/ECM CAN 2 – Not Used CAN 3 – Not Used Multi-Set Controller: CAN 1 – Engine ECU/ECM CAN 2 – AMSC CAN 3 – Redundant AMSC Mains (Utility) Controller: CAN 1 – Not Used CAN 2 – AMSC CAN 3 – Redundant AMSC Group Controller: CAN 1 – Group AMSC CAN 2 – Bus AMSC CAN 3 – Redundant Group or Bus AMSC
Temperature	
Operating Temperature	-30 °C to +70 °C / -22 °F to +158 °F
Storage Temperature	-40 °C to +85 °C / -40 °F to +185 °F
Dimensions	
Overall (W x H x D)	248.0 mm x 182.6 mm x 45.2 mm / 9.77 " x 7.19 " x 1.78 "
Mounting	
Type	Panel Fascia Mounting
Panel Cut-Out (W x H)	220 mm x 160 mm / 8.66 " x 6.3 "
Maximum Panel Thickness	8 mm / 0.31"

Product Documentation

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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Related Products		
DSEgenset®		
DSEG8900	7" Colour Parallel Genset Controller	G8900-01
DSEG8680	Bus Tie Controller	G8680-01
DSEG8660	Mains (Utility) Controller	G8660-01
DSEG8015	15" Panel PC with DSE SCADA	G8015-01
DSEG0123	Analogue Load Share Lines Interface	G0123-01
DSENet®		
DSE2548	DSENet® LED Output Expansion Module	2548-01
DSE2170	DSENet® RTD / Thermocouple Input & Analogue Output Expansion Module	2170-01
DSE2160	DSENet® Input / Output Expansion Module	2160-01
DSE2157	DSENet® Output Expansion Module	2157-01
DSE2152	DSENet® Analogue Output Expansion Module	2152-01
DSE2133	DSENet® RTD/Thermocouple Input Expansion Module	2133-01
DSE2131	DSENet® Ratiometric Input Expansion Module	2131-01
DSE2130	DSENet® Input Expansion Module	2130-01
DSEWebNet®		
DSE890 MKII	DSEWebNet® Gateway	0890-04
Remote Monitoring Control		
DSE SCADA	G8 Series SCADA	037-060

Product Documentation

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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

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 61010	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% Relative Humidity 48 Hours
BS EN 60068-2-78	Cab Damp Heat Static 40 °C at 93% Relative Humidity 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 - From the front of the module when installed into a control panel (Integrated Gasket)

Product Documentation

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**DSEG8600** Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Single-Set Controller	
Pin	Description
1 to 2	DC Supply
3	Emergency Stop
4	Fuel
5	Start
6	Charge Alternator
7 to 14	Digital Outputs
15 to 19	Analogue Inputs
20 to 22	Not Applicable
23 to 25	Magnetic Pick-Up
26 to 28	Engine ECU/ECM
29 to 31	DSENet®
32 to 34	Not Applicable
35 to 36	Governor Control
37	Not Applicable
38 to 39	AVR Control
40 to 41	Normally Closed Volt Free Output
42 to 43	Normally Open Volt Free Output
44 to 47	Generator Voltage Sensing
48 to 51	Mains (Utility) Voltage Sensing
52 to 56	Generator Current Sensing
57 to 58	Mains (Utility) Current Sensing
59 to 67	Digital Inputs
68 to 70 & 77	Analogue Inputs
71 to 76	2 x RS485

Multi-Set Controller	
Pin	Description
1 to 2	DC Supply
3	Emergency Stop
4	Fuel
5	Start
6	Charge Alternator
7 to 14	Digital Outputs
15 to 19	Analogue Inputs
20 to 22	Redundant AMSC Link
23 to 25	Magnetic Pick-Up
26 to 28	Engine ECU/ECM
29 to 31	DSENet®
32 to 34	AMSC Link
35 to 36	Governor Control
37	Not Applicable
38 to 39	AVR Control
40 to 41	Normally Closed Volt Free Output
42 to 43	Normally Open Volt Free Output
44 to 47	Generator Voltage Sensing
48 to 51	Bus Voltage Sensing
52 to 56	Generator Current Sensing
57 to 58	Not Applicable
59 to 67	Digital Inputs
68 to 70 & 77	Analogue Inputs
71 to 76	2 x RS485

Product Documentation

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Part Number: G8600-01

Mains (Utility) Controller	
Pin	Description
1 to 2	DC Supply
3	Not Applicable
4 to 5	Not Applicable
6	Not Applicable
7 to 12	Digital Outputs
13 to 14	Not Applicable
15 to 19	Not Applicable
20 to 22	Redundant AMSC Link
23 to 25	Not Applicable
26 to 28	Not Applicable
29 to 31	DSENet®
32 to 34	AMSC Link
35 to 36	Not Applicable
37	Not Applicable
38 to 39	Not Applicable
40 to 41	Normally Closed Volt Free Output
42 to 43	Normally Open Volt Free Output
44 to 47	Mains (Utility) Voltage Sensing
48 to 51	Bus Voltage Sensing
52 to 56	Mains (Utility) Current Sensing
57 to 58	Bus / Load Current Sensing
59 to 67	Digital Inputs
68 to 70 & 77	Not Applicable
71 to 76	2 x RS485

Group Controller	
Pin	Description
1 to 2	DC Supply
3	Not Applicable
4 to 5	Not Applicable
6	Not Applicable
7 to 12	Digital Outputs
13 to 14	Not Applicable
15 to 19	Not Applicable
20 to 22	Redundant Bus or Group AMSC Link
23 to 25	Not Applicable
26 to 28	Group AMSC
29 to 31	DSENet®
32 to 34	Bus AMSC Link
35 to 36	Not Applicable
37	Not Applicable
38 to 39	Not Applicable
40 to 41	Normally Closed Volt Free Output
42 to 43	Normally Open Volt Free Output
44 to 47	Group Voltage Sensing
48 to 51	Bus Voltage Sensing
52 to 56	Group Current Sensing
57 to 58	Not Applicable
59 to 67	Digital Inputs
68 to 70 & 77	Not Applicable
71 to 76	2 x RS485

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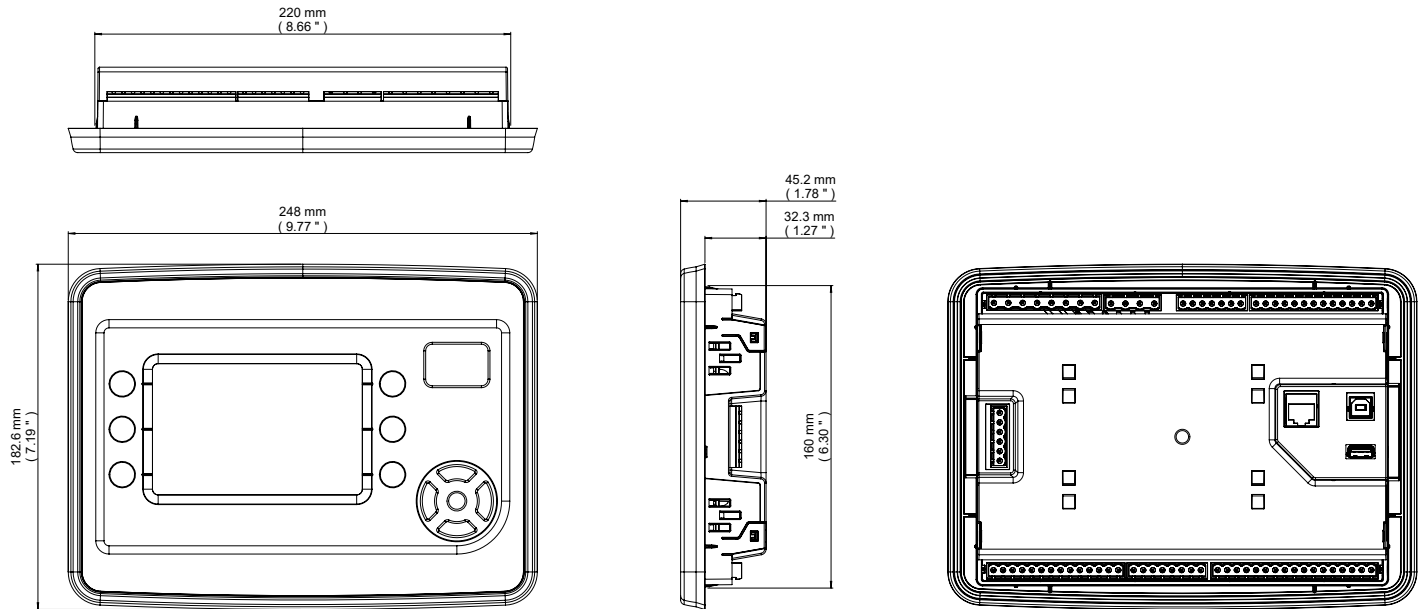
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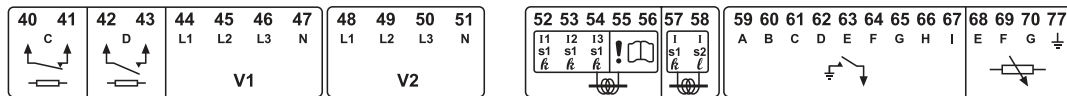
DSEG8600 Parallel Genset Controller with Integral Heater

Part Number: G8600-01

Technical Drawing



Connection Diagram

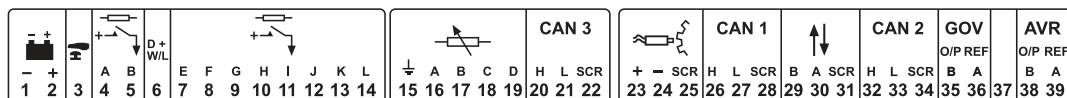


RS485 2	A	RS485 1	A
76	SCR	73	SCR
74	A	72	A
71	B	71	B

DC Supply : 8 V to 35 V, 1 A max
DC Outputs : 24 V, 15 A (T4 to T5); 2 A (T7 to T14)
DC Inputs : 30 V max
Volt-free Outputs : 250 V AC, 8 A
AC Voltage Inputs : 600 V AC, 50 Hz / 60 Hz, 1 phase to 3 phase
AC Current inputs : 5 A, 50 Hz / 60 Hz, 1 phase to 3 phase
Charge Alternator : 30 V DC, 2.5 W max
Magnetic Pickup : 70 V peak, 10 kHz max
Analog Inputs : 11 V DC max (T16 to T19); 32 V DC max (T68 to T70)
Comms Port : 5 V DC max
Governor / AVR : ± 10 V DC



Made in UK
020-1083-01,4



Refer to PIN out description charts for connection information on the operating mode controller is configured for.

Product Documentation

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DSE2157

DSENET® OUTPUT EXPANSION MODULE

The DSE2157 is an output relay expansion module for use with DSENet® compatible control modules. The DSE2157 has been designed to extend a host module's output capabilities.

A maximum of 10 DSE2157's can be connected to an individual module at any one time. All outputs are configurable via the host controller.

The additional output capabilities of the DSE2157 give OEMs the flexibility to meet increasingly complex industry specifications. The module incorporates 'DIN' rail and chassis mountings allowing convenient fixing into a panel.

The module will work up to 1 KM (0.6 miles) from the host control module.

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 @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

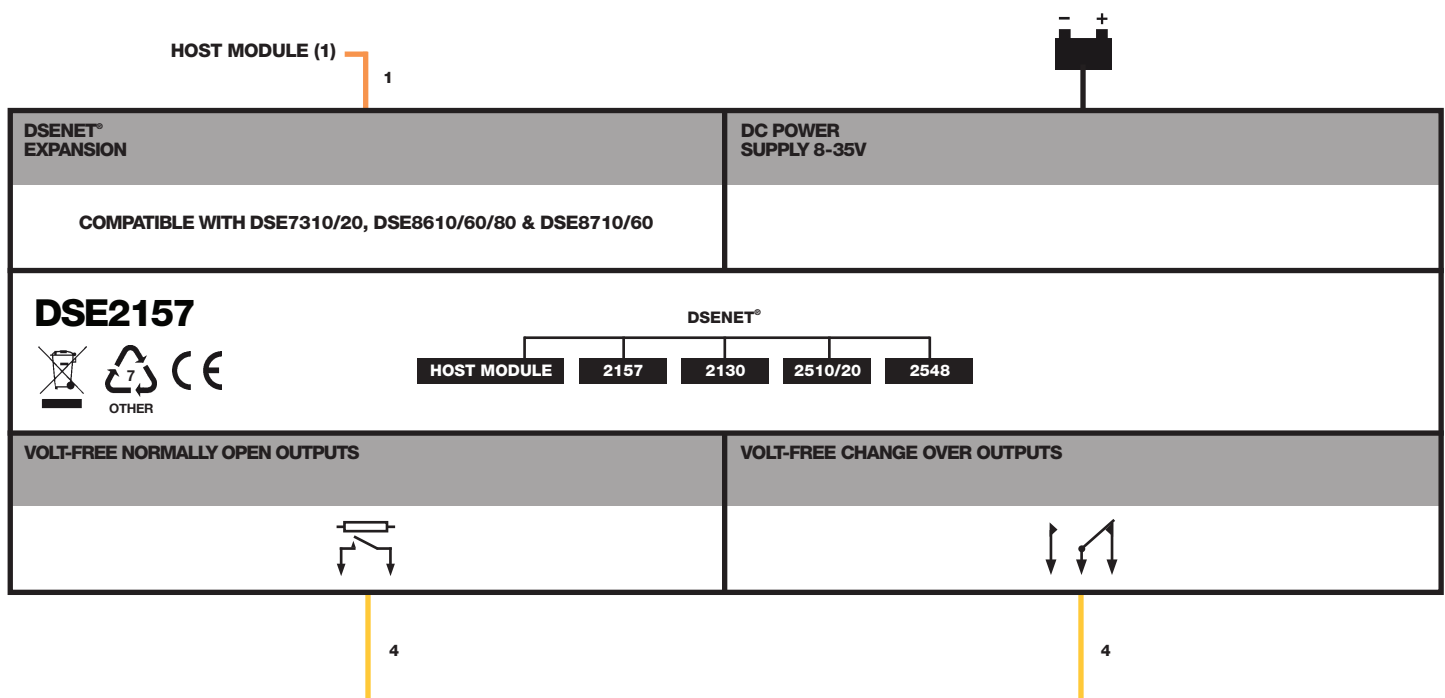
HUMIDITY

BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C @ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C @ 93% RH 48 Hours

SHOCK

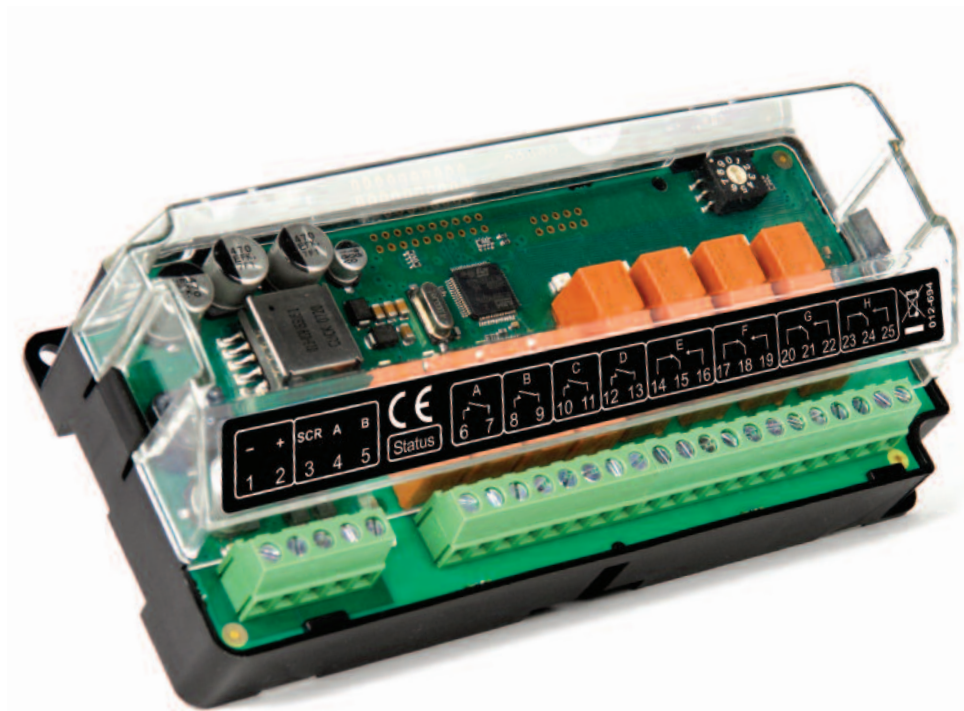
BS EN 60068-2-27
Three shocks in each of three major axes
15 gn in 11 ms

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



DSE2157

DSENET® OUTPUT EXPANSION MODULE



KEY FEATURES

- Power On/Link Lost LED ID SWITCH
- 10 expansion modules can be connected to 1 host controller at a time
- 8 configurable relay contacts with LED indicators:
 - 4 Normally Open (N/O)
 - 4 Change Over (C/O)
- Terminal strip connection for quick and easy set-up

ID SWITCH

The rotary ID switch is used to select the address of the DSE2157 expansion module, as the host control module is capable of giving instructions to a number of DSE2157 expansion modules at the same time.

SPECIFICATION

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

325 mA at 12 V, 152 mA at 24 V

MAXIMUM STANDBY CURRENT

70 mA at 12 V, 32 mA at 24 V

AUXILIARY RELAY CONTACTS

2 Amp DC rated voltage free

DIMENSIONS

OVERALL

165 mm x 76 mm x 49 mm
6.5" x 3" x 1.9"

RELATED MATERIALS

TITLE

DSE2157 Installation Instructions
DSE2157 Operator Manual

PART NO'S

053-034
057-083

DEEP SEA ELECTRONICS PLC UK

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
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EMAIL sales@deepseausa.com **WEBSITE** www.deepseausa.com

DSE2548

DSENET® OUTPUT EXPANSION MODULE

The DSE2548 is an LED expansion module that can be used with all DSENet® compatible control modules. The module has been designed to display a maximum of eight individual LED indications up to a maximum distance of 1 KM (0.6miles).

The DSE2548 is presented in a vertical enclosure. It includes an alarm sounder that is triggered when the host controller detects an alarm condition. The alarm can be muted directly from the DSE2548 using the front push button.

The DSE2548 includes individual LEDs for each channel and a 'Power On' LED that flashes when the link with the host controller is lost.

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 @ +/-7.5 mm,
8 Hz to 500 Hz @ 2 gn

HUMIDITY

BS EN 60068-2-30
Db Damp Heat Cyclic 20/55 °C
@ 95% RH 48 Hours
BS EN 60068-2-78
Cab Damp Heat Static 40 °C
@ 93% RH 48 Hours

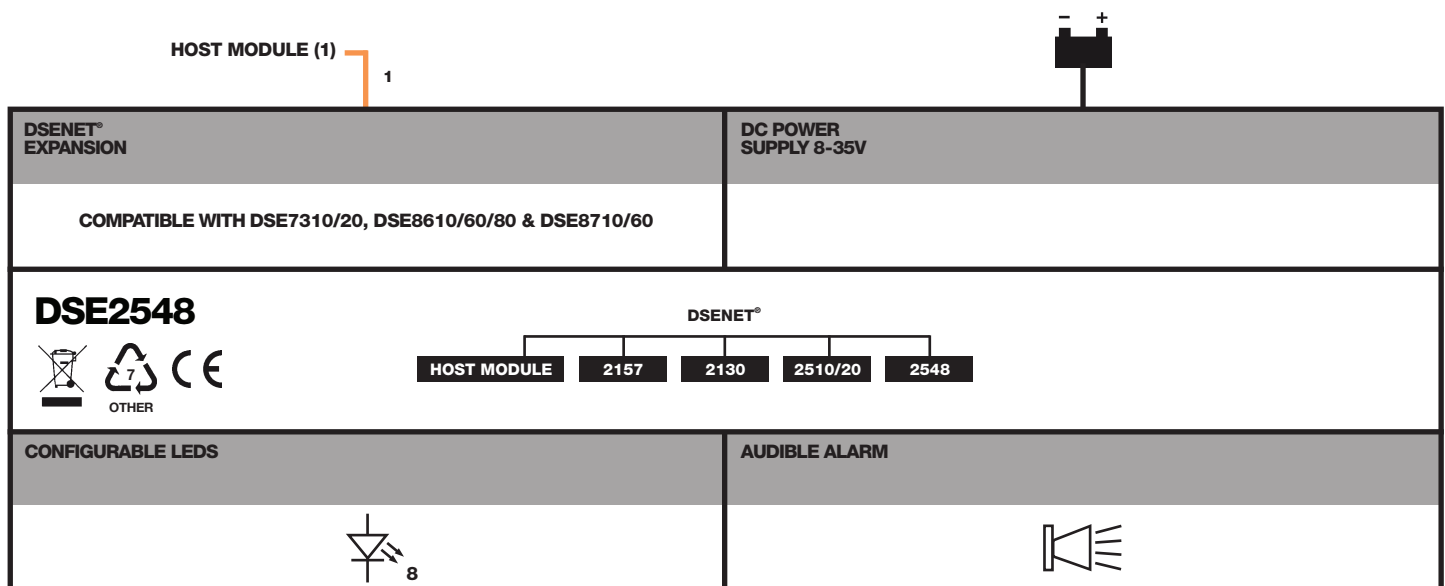
SHOCK

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 supplied sealing gasket.

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



DSE2548

DSENET® OUTPUT EXPANSION MODULE



KEY FEATURES

- Eight configurable LEDs
- Works up to 1 KM (0.6 miles) from the host controller
- 10 modules can be linked together to one host controller

ID SWITCH

The rotary ID switch is used to select the address of the DSE2548 expansion module, as the host control module is capable of giving instructions to a number of DSE2548 expansion modules at the same time.

SPECIFICATION

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

112 mA at 12 V, 53 mA at 24 V

MAXIMUM STANDBY CURRENT

74 mA at 12 V, 35 mA at 24 V

DIMENSIONS

OVERALL

180 mm x 116 mm x 42.7 mm
7.07" x 4.57" x 1.68"

PANEL CUT-OUT

154 mm x 98 mm
6.06" x 3.86"

MAXIMUM PANEL THICKNESS

8 mm
0.3"

RELATED MATERIALS

TITLE

DSE2548 Installation Instructions
DSE2548 Operator Manual

PART NO'S

053-032
057-084

DEEP SEA ELECTRONICS PLC UK

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DSE890 MKII DSEWebNet® Gateway 4G (GSM/Ethernet)

REMOTE COMMUNICATIONS INTERFACE

DSE890-04 DSEWebNet® Gateway - 4G (GSM) & Ethernet

The DSE890 MKII 4G gateway is used in conjunction with supported DSE controllers to provide remote monitoring and communications data via the DSEWebNet® software.

The DSE890 MKII gateway communicates with a maximum of five connected DSE controllers, monitoring their instrumentation and operating states. When this data changes, the new data is logged in its internal memory and instantly transmitted from the gateway device to the DSEWebNet® server.

The DSEWebNet® software is accessed using an internet browser or mobile app connection. Users are able to perform multiple tasks including: monitoring equipment, clearing alarm conditions and starting/stopping equipment at the click of a button.

For additional information on DSEWebNet® refer to data sheet 055-192.



SPECIFICATIONS

DC SUPPLY
CONTINUOUS VOLTAGE RATING
8 V to 36 V continuous

CRANKING DROPOUTS
Able to survive 0 V for 100 ms, providing supply was at least 8 V before dropout and supply recovers to 8 V. This is achieved without the need for internal batteries

MAXIMUM OPERATING CURRENT
GSM 755 mA at 12 V
376 mA at 24 V
GSM & GPS 755 mA at 12 V
376 mA at 24 V

MAXIMUM STANDBY CURRENT
GSM 207 mA at 12 V
113 mA at 24 V
GSM & GPS 207 mA at 12 V
113 mA at 24 V

COMMUNICATIONS
USB (Single DSE Controller)
CAN* (Single DSE Controller)
RS485 (Multiple DSE Controllers)
Ethernet (Multiple DSE Controllers)

DIMENSIONS
85 mm x 149 mm x 51 mm

MOUNTING
DIN Rail
Chassis Mount

* Functionality Coming Soon

RELATED MATERIALS

TITLE	PART NO.
DSE890 Installation Instructions	053-247
DSE890 Operators Manual	057-304
DSEWebnet® Data Sheet	055-192
DSEWebnet® PC Internet Browser Software Manual	057-168
DSEWebnet® Smart Device Software Manual	057-235

ACCESSORIES

PART	PART NO.
Combined 4G LTE (Main & Diversity) and GPS Antenna	020-1053

COMPATIBLE DSE CONTROLLERS

For a complete list of DSE controllers compatible with DSEWebNet® software, please refer to the DSE890 Operators Manual (057-304).

DEEP SEA ELECTRONICS LTD

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Deep Sea Electronics Ltd maintains a policy of continuous development and reserves the right to change the details shown on this data sheet without prior notice. The contents are intended for guidance only.

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Registered in England & Wales No.01319649
VAT No.316923457

MicroGenius®

Genset Battery Chargers

12 & 24 Volts, 6 to 100 Amps



Small. Powerful. Rugged.

- Hardened switchmode powertrain** - delivers first-class abuse resistance and energy efficiency
- Patented charging algorithms** - recharge faster and more safely; cut risk of sudden battery failure
- UL Listed for emergency generators** - from 6 to 100 amp output
- Tested to high vibration levels** - survive harsh genset duty
- Standard J-1939 and Modbus communications** - facilitate genset and building integration
- Small, lightweight packages** - enable installation in smaller spaces

Robust reliability. More power in less space.

SENS MicroGenius advanced technology genset battery chargers deliver from 6 to 100 amps at 12 or 24 volts*.

MicroGenius is the only family of genset chargers that meets all modern battery charging and energy efficiency regulations.

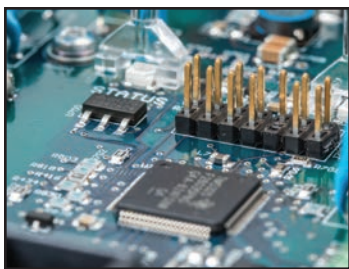
- UL listed to category BBHH required for "Emergency Generators"
- Legal for sale under California and Oregon energy efficiency regulations
- All units survive harsh EN 60068 standard vibration abuse at the 4G level

**Consult factory for higher output voltage MicroGenius chargers up to 120 volts DC nominal*

State-of-the-art features

Patented Dynamic Boost™ charging

Dynamic Boost charges batteries faster and more completely than similarly rated conventional chargers, but with lower risk of overcharge.



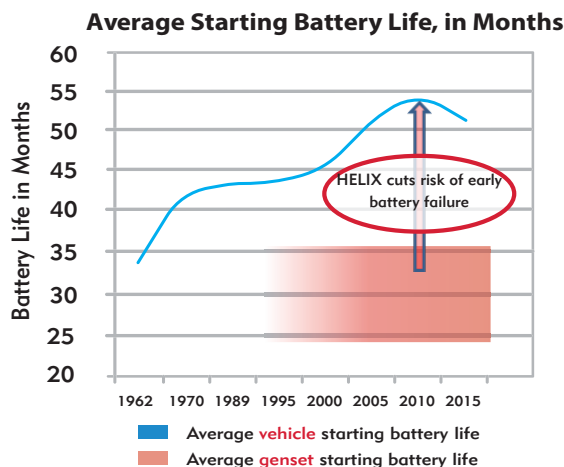
Dependable modular architecture

MicroGenius S2 and S4 employ multiple MicroGenius chargers that enable either higher current output, internal redundancy or multiple outputs.



Safer, more reliable battery performance

Revolutionary HELIX™ (High Efficiency, Life-eXtending) technology from SENS reduces the risk of both early and catastrophic genset battery failures.



UL listed for emergency and standby generator duty

MicroGenius chargers rated 6 through 100A output are UL listed to category code BBHH "Emergency & Standby Generators"



ONLINE CERTIFICATIONS DIRECTORY

BBHH.EX6409

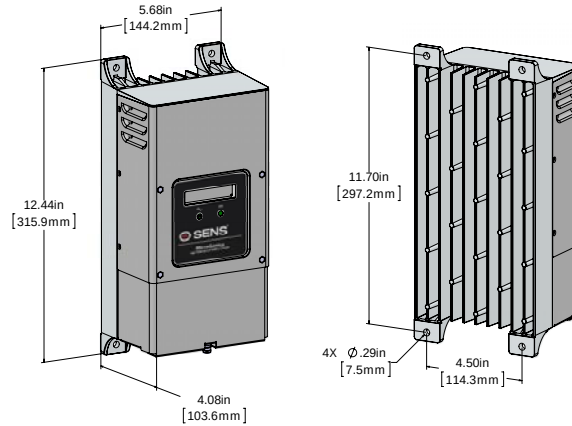
Battery Chargers for Engine-driven Emergency and Standby Power

MicroGenius 2

6.0 lbs. (2.8 kg) for 12/24V and $\leq 15A$

7.2 lbs. (3.3 kg) maximum

Choose **MicroGenius 2** if your DC current requirement is $\leq 25A$



Specifications for MicroGenius 2: 6A to 25A Output

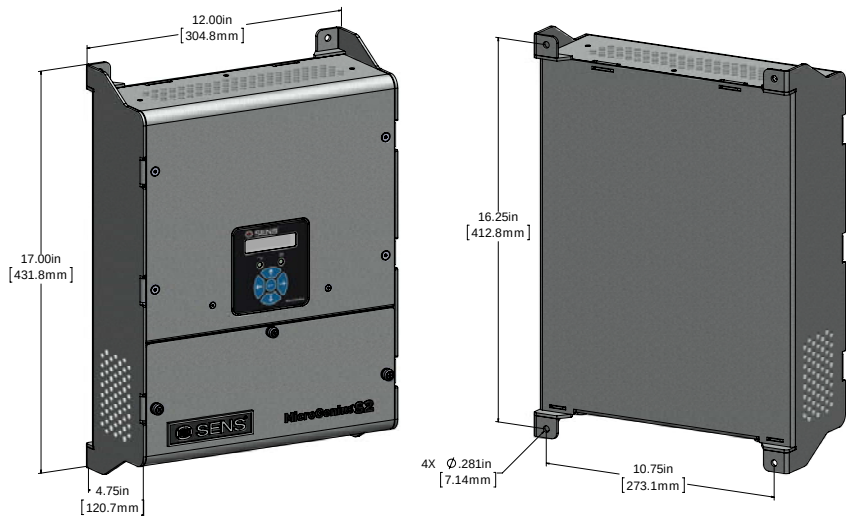
AC input	VAC, Hz	90-265 ¹ single-phase VAC, 47-63 Hz DC voltage applied at AC terminals: 100-375 VDC, 0Hz ($\geq 500W$ models only, output limited to 2/3 rated power)
	Protection	Supplementary overcurrent protection fuse, transient protected to EN 61000-4-5 level 4
	Power factor & efficiency	PF > .95 typical; max efficiency 93-95%; meets CEC Title 20 Efficiency Regulations; standby AC draw <3W for 180-450W and <7W for 500-750W
DC output	Volts, amps	12V/24V nom. at 10A/6A, 12A/10A, 15A/15A ¹ , 20A/20A, or 25A/25A
	Charging modes	Multi-stage, including float, boost and two additional HELIX voltages in flooded lead-acid battery program
	Current limit	Factory set at 100% of rating. Field adjustable w/optional keypad or from PC ²
	Charging characteristic	Constant voltage, current limited; patented Dynamic Boost control and HELIX (when FLA battery is selected)
	Line & load regulation	$\pm 0.5\%$
	Output ripple	< 30 mVrms with or without battery. Delivers fast-responding, stable, well-filtered DC without battery.
	Battery temp. compensation	Standard. Optional remote battery temperature probe ³
	Output protection	Current limit, supplementary overcurrent protection fuse, transient protected
	Dead battery charge	Starts into, and recharges zero volt battery without user intervention
Adjustment & Controls	Parallel operation	Two or more chargers operate with all modes synchronized for increased current or fault tolerance ⁴
	Charge mode control	Fully automatic patented Dynamic Boost system (VRLA or ultracap charging program disables boost mode). Manually initiated timed boost & commissioning modes available with keypad option ⁵ .
	Adjustments	12 or 24-volt; battery type program; fine voltage setting; alarm setpoints; alarm relay mapping
	Battery type programs	Flooded lead-acid, AGM, NiZn, NaCl (salt), NiCd, VRLA, ultracapacitor
Status display	Field voltage adjustment	3 methods: jumper pins, from front panel keypad ⁵ or from PC ²
	LEDs	Two multi-color front panel status LEDs
	Metering & status display	Optional. Voltmeter accurate to $\pm 1\%$; ammeter to $\pm 1\%$; 20-character display of status & alarm messages ⁶ .
Alarms	Alarms	Factory set, field reconfigurable, latching or non-latching. Alarm functions announced on the J-1939 and Modbus ports and on the optional LCD include summary, AC fail, charger fail, high DC volts, low DC volts, low cranking volts, overvoltage shutdown, reverse polarity battery, incompatible battery, invalid settings, I/O bus inactive, thermal fold back, no temperature probe, current limiting, ground fault and low current. Any alarm is assignable to Form C contacts.
	Alarms: Form C contacts	Optional. Two ⁷ or five ⁸ Form C contacts, each rated 30V, 2A resistive, assignable. Standard configuration includes summary, AC fail, charger fail, high DC volts, low DC volts and low cranking volts.
Networking	J-1939 communications	CAN 2.0 extended ID on RJ-45 port
	Modbus communications	Modbus RS-485 on RJ-45 port
	SENSbus/USB	Proprietary bus for connection of paralleled chargers, SENS accessories and SENS Setup Utility
Environmental	Operating temperature ⁹	Convection cooled; -40C to +70C; full spec from -40C to +50C ¹⁰
	Humidity	5% to 95%, non-condensing
	Ingress protection	NEMA2/IP22; NEMA3R/IP34; UL Listed "Rainproof"
	Vibration & shock resistance	Vib: Swept Sine (EN60068-2-6): 4G, 18-500 Hz, 3 axes. Random: 20-500Hz, .01G ² /Hz. Shock: EN 60068-2-27 (15G)
	Electrical transient	ANSI/IEEE C62.41 & EN 61000-4-12 on power terminals
Abuse protection	Reverse polarity	Charger self-protects without fuse clearing. Indication via LED & optional LCD.
	Wrong voltage battery	Charger-battery voltage mismatch shuts down charger. Indication via LED & optional LCD.
	Overvoltage shutdown	Selective; shutdown only operates if charger causes the overvoltage condition
	Overtemperature protection	Gradual output power reduction if heatsink temperature becomes excessive
Regulatory compliance	North America	C-UL Listed for US & Canada: UL 1236 categories BBGQ, BBHH, BBJY and QWIR ¹¹ , CSA 22.2, No. 107.2. Certified to UL 1236 supplements SB (marine), SC (fire pump) and SE (emergency generator).
		NFPA-70, NFPA-110 ¹²
		FCC Part 15, Class B, $\geq 600W$ models Class A
	European Union (CE)	Seismic: Rigid & non-structure wall mount; max S_{DS} of 2.5G. IBC 2000-2022, Calif. BC 2007-2022
		American Bureau of Shipping, type approved
		EMC: 2014/30/EU (EN 61000-6-2 & EN 61000-6-4) LVD: 2014/35/EU (EN 60335-1 & EN 60335-2-29) RoHS: 2015/863 (EN 63000)
Construction	Housing/configuration	Die-cast aluminum heatsink base with stainless steel covers & fasteners
	Connections	AC & DC terminal blocks: 20 to 10 AWG. J-1939 and Modbus-485: RJ-45. Form C alarms: 28 to 16 AWG

¹ When set for 24-volt output, full 15A output of 450W available above 170 VAC input, 12A output current max between 100 VAC and 170 VAC input ² Requires USB charger option or adapter SENS p/n 209254 plus free SENS software available at www.sens-usa.com ³ Remote battery temp sensor is optional. Order SENS p/n 209481 ⁴ Requires standard RJ-45 network cable to connect paralleling bus. Order SENS p/n 208118-72 (72-inch length) or 208118-180 (180-inch length) ⁵ Requires that digit 12 of the model number be F ⁶ Requires that digit 12 of the model number be D, E, or F ⁷ Models with E as digit 12 of the model number include 2 ea. Form C alarm contacts ⁸ Models with D or F as digit 12 of the model number include 5 ea. Form C alarm contacts ⁹ At 65 deg. C and above the LCD display may be unreadable and display life will be reduced ¹⁰ Full spec to +55C for 180W and +40C for 450W ¹¹ 300W and 450W models only ¹² All chargers equipped with an alarm / display board meet NFPA-110 requirements. For chargers without an alarm / display board to meet NFPA-110, charger volts, amps and charger fail alarm available on the J-1939 port must be announced by the genset control panel.

MicroGenius S2

15.4 lbs. (7 kg) maximum

Choose **S2** if your DC current requirement is >25A and ≤50A, or if you need circuit breakers, redundant output or dual 25A output



Specifications for MicroGenius **S2**: 20A to 50A Output

AC input	VAC, Hz	90-265 ¹ VAC, 47-63 Hz
	Protection	Supplementary overcurrent protection fuse, transient protected to EN 61000-4-5 level 4. Optional AC circuit breaker.
	Power factor & efficiency	PF >.95 typical; max efficiency 93-95%; meets CEC Title 20 Efficiency Regulations;
DC output	Volts, amps	12V/24V nom. at 20A, 30A, 40A and 50A
	Charging modes	Multi-stage, including float, boost and two additional HELIX voltages in flooded lead-acid battery program
	Current limit	Factory set at 100% of rating. Field adjustable with keypad or from PC.
	Charging characteristic	Constant voltage, current limited; patented Dynamic Boost control and HELIX (when FLA battery is selected)
	Line & load regulation	±0.5%
	Output ripple	< 30 mVrms with or without battery. Delivers fast-responding, stable, well-filtered DC without battery.
	Battery temp. compensation	Standard. Optional remote battery temperature probe. ³
	Output protection	Current limit, supplementary overcurrent protection fuse, transient protected. Optional DC circuit breaker.
	Dead battery charge	Starts into, and recharges zero volt battery without user intervention
	Parallel operation	Two or more chargers operate with all modes synchronized for increased current or fault tolerance ⁴
Adjustment & Controls	Charge mode control	Fully automatic patented Dynamic Boost system. Manual boost & battery commissioning available from keypad.
	Adjustments	12 or 24-volt; battery type program; fine voltage setting; alarm setpoints; alarm relay mapping
	Battery type programs	Flooded lead-acid, AGM or Ni-Cd for engine starting; VRLA for reserve power; ultracapacitor
	Field voltage adjustment	2 methods: from front panel keypad or from PC ²
Status display	LEDs	Two multi-color front panel status LEDs
	Metering & status display	Voltmeter accurate to +1%; ammeter to +1%. 20-character display of status & alarm messages.
Alarms	Alarms	Factory set, field reconfigurable, latching or non-latching. Alarm functions announced on the J-1939 and Modbus ports and on the LCD include summary, AC fail, charger fail, high DC volts, low DC volts, low cranking volts, overvoltage shutdown, reverse polarity battery, incompatible battery, invalid settings, I/O bus inactive, thermal fold back, no temperature probe, current limiting, ground fault and low current. Any alarm is assignable to Form C contacts.
	Alarms: Form C contacts	Five Form C contacts, each rated 30V, 2A resistive, assignable. Standard configuration includes summary, AC fail, charger fail, high DC volts, low DC volts and low cranking volts.
Networking	J-1939 communications	CAN 2.0 extended ID on RJ-45 port
	Modbus communications	Modbus RS-485 on RJ-45 port; Modbus TCP/IP (optional) on RJ-45 port
	SENSbus/USB	Proprietary bus for connection of paralleled chargers, SENS accessories and SENS Setup Utility
Environmental	Operating temperature	-40C to +70C; full spec from -40C to +40C (convection cooled) ⁵
	Humidity	5% to 95%, non-condensing
	Ingress protection	IP 20; NEMA 1. Optional drip shield for IP 22/NEMA 3R rating. ⁶
	Vibration & shock resistance	Vib: Swept Sine (EN60068-2-6): 4G, 18-500 Hz, 3 axes. Random: 20-500Hz, .01G ² /Hz. Shock: EN 60068-2-27 (15G)
	Electrical transient	ANSI/IEEE C62.41 & EN 61000-4-12 on power terminals
Abuse protection	Reverse polarity	Charger self-protects without fuse clearing. Indication via LED & LCD.
	Wrong voltage battery	Charger-battery voltage mismatch shuts down charger. Indication via LED & LCD.
	Overvoltage shutdown	Selective; shutdown only operates if charger causes the overvoltage condition
	Overtemperature protection	Gradual output power reduction if heatsink temperature becomes excessive
Regulatory compliance	North America	C-UL Listed for US & Canada: UL 1236 categories BBGQ, BBHH, BBJY and QWIR, CSA 22.2, No. 107.2. Certified to UL 1236 supplements SB (marine), SC (fire pump) and SE (emergency generator).
		NFPA-70, NFPA-110
		FCC Part 15, Class A
		Seismic: Rigid & non-structure wall mount; max S _{DS} of 2.5G. IBC 2000-2022, Calif. BC 2007-2022
		American Bureau of Shipping, type approved
	European Union (CE)	EMC: 2014/30/EU (EN 61000-6-2 & EN 61000-6-4)
		LVD: 2014/35/EU (EN 60335-1 & EN 60335-2-29) RoHS: 2015/863 (EN 63000)
Construction	Housing/configuration	Aluminum with powder coated finish
	Connections	AC & DC terminal blocks: 20 to 2 AWG. J-1939 and Modbus: RJ-45. Form C alarms: 28 to 16 AWG

¹ Below 170 VAC input, 24V-30A model limited to 24A output and 24V-40A model limited to 37A output ² Requires free SENS software available at www.sens-usa.com ³ Remote battery temp sensor is optional. Order SENS p/n 209481 ⁴ Requires standard RJ-45 network cable to connect paralleling bus. Order SENS p/n 208118-72 (72-inch length) or 208118-180 (180-inch length) ⁵ At 65 deg. C and above the LCD display may be unreadable and display life will be reduced ⁶ Drip shield is optional. Order SENS p/n 209291.

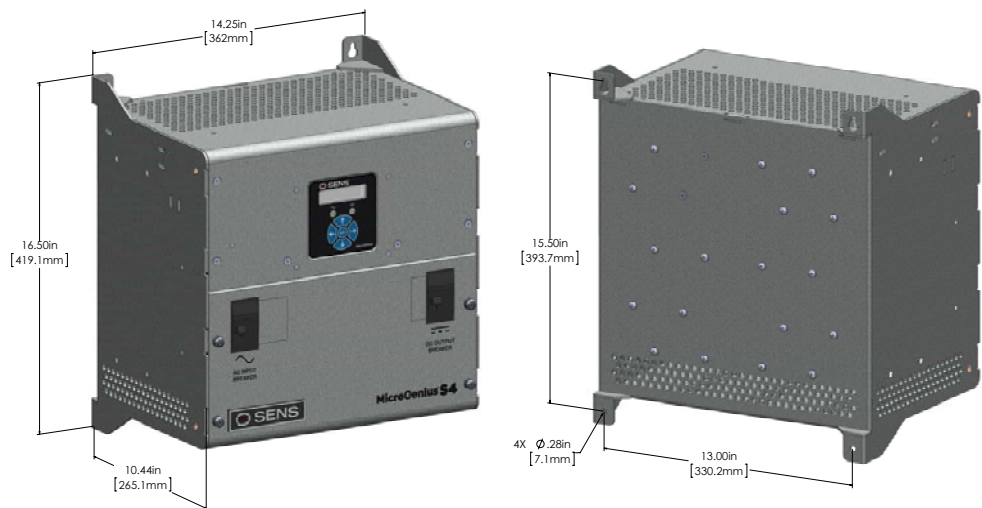
MicroGenius S4

36.8 lbs (16.7 kg) maximum

Choose **S4** for:

- DC current >50A
- Circuit breakers
- Added surge suppression
- Internal redundancy
- 2 or more battery banks

19 or 23 inch rack mount
brackets optional



Specifications for MicroGenius **S4**: 25A to 100A Output

AC input	VAC, Hz	90-265 ¹ VAC, 47-63 Hz
	Protection	Supplementary overcurrent protection fuse, transient protected to EN 61000-4-5 level 4. Optional AC circuit breaker. Optional AC input surge protector with indicator.
	Power factor & efficiency	PF > .95 typical; max efficiency 93-95%; meets CEC Title 20 Efficiency Regulations;
DC output	Volts, amps	12V/24V nom. at 25A, 50A, 75A and 100A
	Charging modes	Multi-stage, including float, boost and two additional HELIX voltages in flooded lead-acid battery program
	Current limit	Factory set at 100% of rating. Field adjustable with keypad or from PC. ²
	Charging characteristic	Constant voltage, current limited; patented Dynamic Boost control and HELIX (when FLA battery is selected)
	Line & load regulation	±0.5%
	Output ripple	< 30 mVrms with or without battery. Delivers fast-responding, stable, well-filtered DC without battery.
	Battery temp. compensation	Standard. Optional remote battery temperature probe. ³
	Output protection	Current limit, supplementary overcurrent protection fuse, transient protected. Optional DC circuit breaker. Optional DC output surge protector with indicator.
	Dead battery charge	Starts into, and recharges zero volt battery without user intervention
	Parallel operation	Two or more chargers operate with all modes synchronized for increased current or fault tolerance ⁴
Adjustment & Controls	Charge mode control	Fully automatic patented Dynamic Boost system. Manual boost & battery commissioning available from keypad.
	Adjustments	12 or 24-volt; battery type program; fine voltage setting; alarm setpoints; alarm relay mapping
	Battery type programs	Flooded lead-acid, AGM or Ni-Cd for engine starting; VRLA for reserve power; ultracapacitor
	Field voltage adjustment	2 methods: from front panel keypad or from PC ²
Status display	LEDs	Two multi-color front panel status LEDs
	Metering & status display	Voltmeter accurate to +1%; ammeter to +1%. 20-character display of status & alarm messages.
Alarms	Alarms	Factory set, field reconfigurable, latching or non-latching. Alarm functions announced on the J-1939 and Modbus ports and on the LCD include summary, AC fail, charger fail, high DC volts, low DC volts, low cranking volts, overvoltage shutdown, reverse polarity battery, incompatible battery, invalid settings, I/O bus inactive, thermal fold back, no temperature probe, current limiting, ground fault and low current. Any alarm is assignable to Form C contacts.
	Alarms: Form C contacts	Five Form C contacts, each rated 30V, 2A resistive, assignable. Standard configuration includes summary, AC fail, charger fail, high DC volts, low DC volts and low cranking volts.
Networking	J-1939 communications	CAN 2.0 extended ID on RJ-45 port
	Modbus communications	Modbus RS-485 on RJ-45 port; Modbus TCP/IP (optional) on RJ-45 port
	SENSbus/USB	Proprietary bus for connection of paralleled chargers, SENS accessories and SENS Setup Utility
Environmental	Operating temperature	-40C to +70C; full spec from -40C to +40C (convection cooled) ⁵
	Humidity	5% to 95%, non-condensing
	Ingress protection	IP 20; NEMA 1. Optional drip shield for IP 22/NEMA 3R rating. ⁶
	Vibration & shock resistance	Vib: Swept Sine (EN60068-2-6): 4G, 18-500 Hz, 3 axes. Random: 20-500Hz, .01G ² /Hz. Shock: EN 60068-2-27 (15G)
	Electrical transient	ANSI/IEEE C62.41 & EN 61000-4-12 on power terminals
Abuse protection	Reverse polarity	Charger self-protects without output protective device clearing. Indication via LED & LCD.
	Wrong voltage battery	Charger-battery voltage mismatch shuts down charger. Indication via LED & LCD.
	Overvoltage shutdown	Selective; shutdown only operates if charger causes the overvoltage condition
	Overtemperature protection	Gradual output power reduction if heatsink temperature becomes excessive
Regulatory compliance	North America	C-UL Listed for US & Canada: UL 1236 categories BBGQ, BBHH, BBJY and QWIR, CSA 22.2, No. 107.2. Certified to UL 1236 supplements SB (marine), SC (fire pump) and SE (emergency generator).
		NFPA-70, NFPA-110
		FCC Part 15, Class A
		Seismic: Rigid & non-structure wall mount; max S _{DS} of 2.5G. IBC 2000-2022, Calif. BC 2007-2022
	European Union (CE)	American Bureau of Shipping, type approved
		EMC: 2014/30/EU (EN 61000-6-2 & EN 61000-6-4)
		LVD: 2014/35/EU (EN 60335-1 & EN 60335-2-29)
Construction	Housing/configuration	Aluminum with powder coated finish. Rack mount brackets for 19 and 23 inch rack optional.
	Connections	AC & DC terminal blocks: 14 AWG to 2/0. AC & DC breakers, <50A (optional): 14 to 2 AWG. AC & DC breakers, ≥50A (optional): 12 AWG to 2/0. J-1939 and Modbus: RJ-45. Form C alarms: 28 to 16 AWG

¹ 120VAC minimum for 100A units ² Requires free SENS software available at www.sens-usa.com ³ Remote battery temp sensor is optional. Order SENS p/n 209481 ⁴ Requires standard RJ-45 network cable to connect paralleling bus. Order SENS p/n 208118-72 (72-inch length) or 208118-180 (180-inch length) ⁵ At 65 deg. C and above the LCD display may be unreadable and display life will be reduced ⁶ Drip shield is optional. Order SENS p/n 209287.

How To Order **MicroGenius 2**

Product Type	Power	-	Output Volts	-	Output Current	-	Alms & Comms	Adapter & RTS
M	4	-	22	-	1515	-	F	N

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ

	Parameter	Code	Value
Ⓐ	Product Family	M	MicroGenius 2
Ⓑ	Power	1 3 4 6 7	180W 300W 450W 600W 750W
Ⓒ	Output Voltage	22	12/24V
Ⓓ	Output Current	1006 1210 1515 2020 2525	10A @ 12V; 6A @ 24V (180W only) 12A @ 12V; 10A @ 24V (300W only) 15A @ 12V; 15A @ 24V (450W only) 20/20A @ 12/24V (600W only) 25/25A @ 12/24V (750W only)
Ⓔ	Alarm & Communication Options	A D E F G	Base model; includes J-1939 & Modbus RS-485 communications Base model + LCD + USB-C + 5 ea. Form C alarm relays Base model + LCD + USB-C + 2 ea. Form C alarm relays Base model + LCD + USB-C + 5 ea. Form C relays + keypad control Base model + LCD + USB-C + 5 ea. Form C relays + keypad control + Modbus TCP/IP
Ⓕ	Adapter Plate & Remote Temperature Sensor Options	F G L N T	FC to MicroGenius 2 adapter plate (enclosed charger only) MicroGenius 150 to MicroGenius 2 adapter plate (enclosed charger only) LC to MicroGenius 2 adapter plate (enclosed charger only) NRG10 to MicroGenius 2 adapter plate (enclosed charger only) Remote Temperature Sensor shipped with charger

How To Order **MicroGenius S2 & S4**

Product Type	Enclosure	-	Protect. Options	Comms	Config	-	Port A Code	Port A Redun.	Port B Code	Port B Redun.	Port C Code	Port C Redun.	Port D Code	Port D Redun.
S	4	-	C	1	0	-	H	0	0	0	0	0	0	0

Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ

Contact the factory to configure chargers with multiple outputs or internal redundancy.

	Parameter	Code	Value
Ⓐ	Product Family	S	MicroGenius S
Ⓑ	Enclosure	2 4	S2 chassis S4 chassis
Ⓒ	AC & DC protection configuration	A B C	Standard, no circuit breakers AC and DC circuit breakers AC and DC breakers plus supplementary surge protection (S4 only)
Ⓓ	Communications	0 1 2 3	J-1939 and Modbus RS-485 J-1939 and Modbus TCP/IP J-1939 and Modbus RS-485 with RJ-45 to terminal block adapter J-1939 and Modbus TCP/IP with RJ-45 to terminal block adapter
Ⓔ	Configuration	0 R T	Standard 19" rack mount ears (S4 only) 23" rack mount ears (S4 only)
Ⓕ	Output Current	B S2: D E G C S4: G J K	20A 30A 40A 50A 25A 50A 75A 100A

Contact SENS or your local sales representative for additional specification, engineering and installation information, or visit SENS' website for latest available data. Specification subject to change without notice.

SENS, Stored Energy Systems, the battery/rectifier logo, Dynamic Boost, HELIX and MicroGenius are trademarks of Stored Energy Systems LLC. Patented US 9,270,140; 9,385,556; 9,413,186; 9,509,164; 9,466,995; 9,948,125.

Contact Information

Sales 1.866.736.7872 • 303.678.7504 • Fax 303.678.7504 • info@sens-usa.com • www.sens-usa.com

Stored Energy Systems, LLC 1840 Industrial Circle, Longmont, CO 80501 USA

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111071 H

What to do when your GFCI trips

GFCIs are important safety tools that help protect people from shock or electrocution. Even though the latest models have their own self-test feature, it's still important to test them monthly and perform a visual inspection to be sure they're in good condition.

Your GFCI is designed to trip when it detects a ground fault, which occurs when current flows along an unintended path such as through water or a person.

- Test your GFCIs monthly by pressing the 'TEST' and 'RESET' buttons on the face of the device.
- Perform a simple visual inspection to be sure they're in good condition. If the plug connection is loose or the outlet is discolored or warm, replace the GFCI immediately.

What to Do in the Event of a GFCI Trip

Tripping can happen for a number of reasons.

Perform a Visual Inspection

- Take a look at the GFCI. As with any electrical outlet, if you notice any signs of discoloration or loose plug connection, you'll need to replace it immediately.
- Look at appliances or cords that were plugged into the GFCI at the time of the trip, as well as any devices plugged into outlets downstream of the GFCI. Check for damage like frayed wires or faulty devices.

Take Note: What Was In Use?

- If your outlet appears to be in good condition, take note of what was happening when the GFCI tripped.

Were you using a specific appliance?

Did you plug something in, or turn something on?

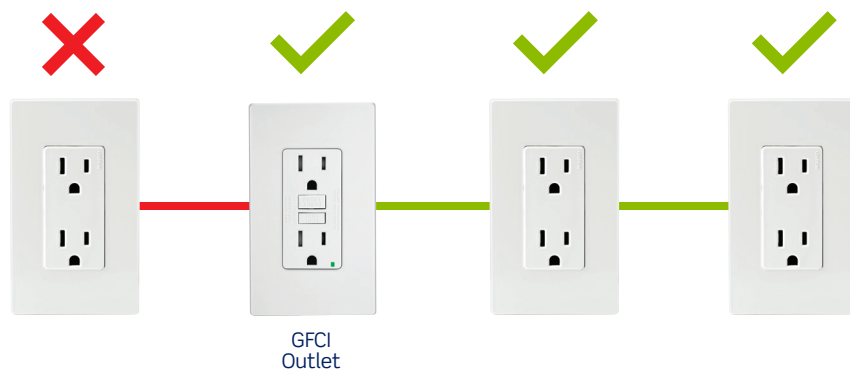
If there's an obvious cause for the trip, you should unplug the device as it may be faulty and causing the GFCI to trip. If the GFCI continues to trip, or if the reason for the trip is not obvious, **it's time to contact an electrician.**



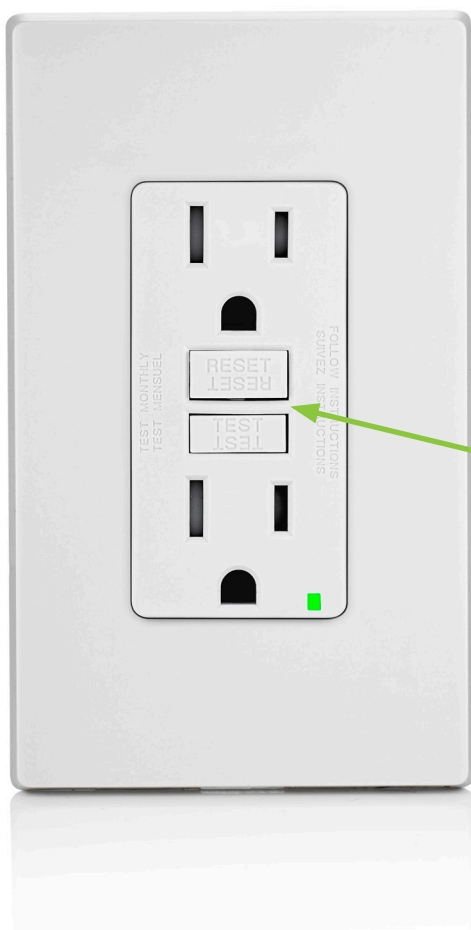
Leviton Mfg. Co., Inc.

201 North Service Road, Melville, NY 11747 Tech Line: 1-800-824-3005 Fax: 1-800-832-9538 www.leviton.com
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GFCI Outlet Protection



GFCIs protect against ground faults that can occur in the outlet face as well as in outlets wired downstream on the same circuit.



Test your GFCIs monthly by pressing the 'TEST' and 'RESET' buttons on the face of the device.



Leviton Manufacturing Co., Inc.

201 North Service Road, Melville, NY 11747-3138

Telephone: 1-800-323-8920 • FAX: 1-800-832-9538

Tech Line: 1-800-824-3005

Mon-Fri 8am-10pm EST, Saturday 9am-7pm EST

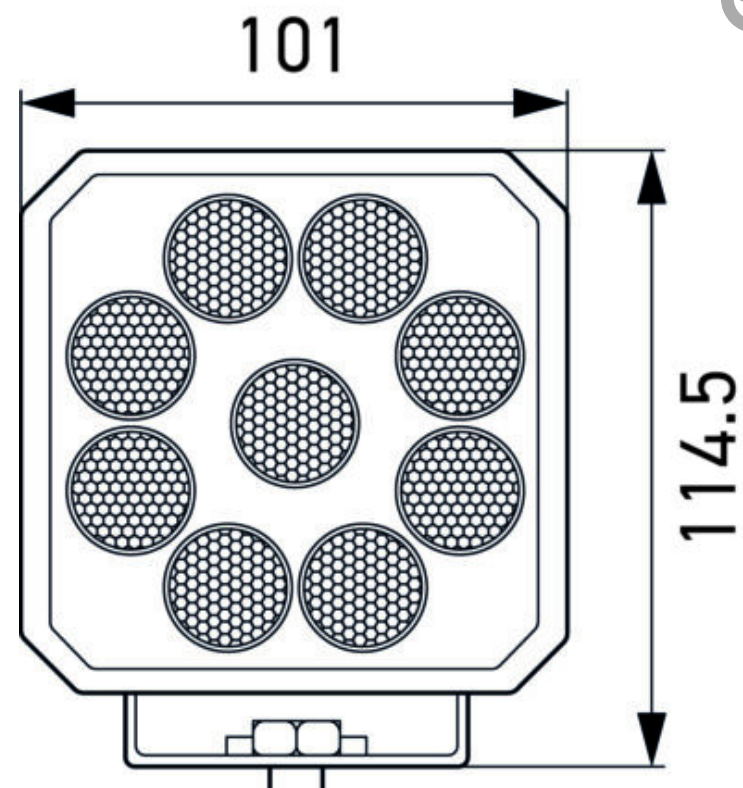
Visit our Website at: www.leviton.com

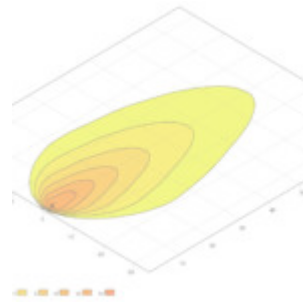
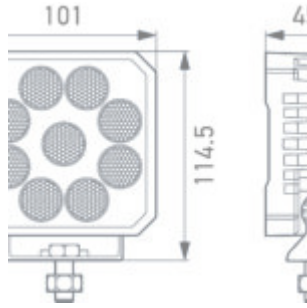
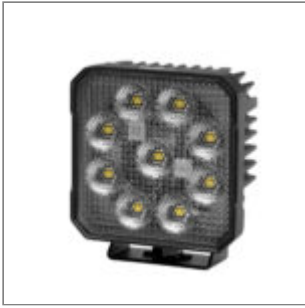
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LIGHTING ▾ HEAVY DUTY ▾ ACCESSORIES ▾ ELECTRICS ▾

Home / Work Lamps / LED Work Lamps / HELLA ValueFit TS3000





HELLA VALUEFIT TS3000

Categories: LED Work Lamps, Work Lamps

Tags: HD, LED, ValueFit, Work Lamps

DESCRIPTION

PART NUMBER

REVIEWS (0)

Features:

- Most powerful HELLA ValueFit worklight
- Active thermo management to prevent overheating
- Under cold working conditions the light output increases for an even better performance (up to 4,000 lm)
- High impact resistancy due to Heavy Duty bracket
- 2 year warranty

Specifications:

- Multi-voltage: 10-30 V
- Number of LED's: 9
- Power Consumption: 31 W
- Luminous Flux (measured): 3,000lm
- Light Temperature: 5700 K
- Ambient Temperature: -40°C to +50°C
- Housing Material: Aluminum
- Optics: Lens & Reflector
- Lens Material: Nylon
- Connection: 30 inch cable with open wire leads
- Bracket: Black stainless steel
- Approvals: CE, ECE-R10, IP67, IP6K9K (withstands high pressure cleaning)
- Packaging: Box
- Minimum Order Qty: 1

Mounting:

- Upright
- Pedestal

Technology:

- LED

Single Lamp includes:

- (1) Lamp
- Universal Mounting Hardware
- Step-by-Step Mounting Instructions

RELATED PRODUCTS



ROKLUME 155 TP



HELLA VALUEFIT PS1000



READ FIRST - IMPORTANT!

sect. 20 00-02-1146
rev. 2020/08/13

Time Switches

Please read the Installation Manual (P/N 00-02-0073) before installing the Time Switches. The latest version and product support can be found at: **support.enovationcontrols.com**, then search for Time Switches.

Alternately, scan this QR Code:



Inventory Control Bar Code:



Quick Specifications:

Range:

5T: 0-5 minutes

15T: 0-15 minutes

Operating Temperature Range: 32° to 185°F (0° to 85°C)

Contact (all models): SPDT, rated 5A @ 480 VAC; 10A @ 250 VAC; 15A @ 48 VDC

Shipping Weight:

5T and 15T: 6 oz. (11.66 g)

Shipping Dimensions:

5T and 15T: 3 x 2-3/4 x 2-3/4 in. (76 x 70 x 70 mm)

Wiring

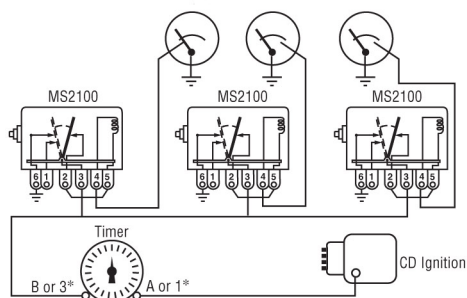


WARNING

Before beginning installation of this product:

- ✓ Disconnect all electrical power to the machine.
- ✓ Make sure the machine cannot operate during installation.
- ✓ Follow all safety warnings of the machine manufacturer.
- ✓ Read and follow all installation instructions.

GAGE Circuit Disconnect (5T and 15T)



*Refer to Product Markings

125-1300 W Fan Heater with Thermostat

FLH Series



Features

- Designed to prevent condensation or maintain minimum temperature in enclosures.
- Built in Thermostat. (-18 C to +38 C) (0 F to +100 F)
- Fan Auto/On switch with pilot light for Heat On indication
- High temperature safety protection
- Aluminum alloy outer casing
- Connection via terminal block.
- 1300W models are cURus approved only.

Part No.	Watts	Voltage	Hz	CFM	Overall Dimensions
					Height x Width x Depth
FLHTF125A115	125 W	120 V	60	20	5.5" x 4.0" x 5.3"
FLHTF125A230	105/125 W	220/240 V	50/60	20	5.5" x 4.0" x 5.3"
FLHTF200A115	200 W	120 V	60	20	5.5" x 4.0" x 5.3"
FLHTF200A230	165/200 W	220/240 V	50/60	20	5.5" x 4.0" x 5.3"
FLHTF400A115	400 W	120 V	60	20	7.5" x 4.0" x 5.3"
FLHTF400A230	335/400 W	220/240 V	50/60	20	7.5" x 4.0" x 5.3"
FLHTF800A115	800 W	120 V	60	20	7.5" x 4.0" x 5.3"
FLHTF800A230	670/800 W	220/240 V	50/60	20	7.5" x 4.0" x 5.3"
FLHTF1300A115	1300 W	120 V	60	50	7.5" x 5.6" x 6.9"
FLHTF1300A230	1080/1300 W	220/240 V	50/60	50	7.5" x 5.6" x 6.9"

Data subject to change without notice

Product data sheet

Specifications

SQUARE D

Green Premium™



LOAD Center QO MLO 240V 125A 3PH 12SP

QO312L125G

Product availability : Stock - Normally stocked in distribution facility

Main

Marketing Trade Name	QO
Product Type	Load Center
Cover Type	Order separately

Complementary

Tightening Torque	Main lugs 50 lb.in, AWG 6...AWG 2/0, aluminium/copper Cover 20 lb.in
Load Center Type	Main lugs
Rated Current	125 A
Number of Spaces	12
Max Short Circuit Current Rating	65 kA
Maximum Number of Single Pole Circuits	12
Maximum Number of Tandem Breakers	0
Number of Phases	3 phase
Voltage Rating	208Y/120 V AC 240/120 V delta AC 240 V delta AC
Wire Size	AWG 6...AWG 2/0 aluminium/copper
Ground Bar	Grounding bar included (not installed)
Electrical Connection	Lugs
Wiring Configuration	3-wire 4-wire
Busbar Material	Tin plated copper busbar
Enclosure Material	Welded sheet steel
Surface Finish	Baked enamel Gray
Box Number	6
Height	17.91 in (455 mm)
Width	14.25 in (362 mm)

* Price is “List Price” and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

Environment

Enclosure Rating	NEMA 1 indoor
Ambient Air Temperature for Operation	23 °F (-5 °C) 104 °F (40 °C)
Product Certifications	UL Listed

Ordering and shipping details

Category	00011 - QO 3PH LOAD CENTER,INDOOR
Discount Schedule	DE3
GTIN	785901295037
Nbr. of units in pkg.	1
Package weight(Lbs)	11.00 lb(US) (4.99 kg)
Returnability	Yes
Country of origin	US

Packing Units

Unit Type of Package 1	PCE
Package 1 Height	6.30 in (16.002 cm)
Package 1 width	16.50 in (41.91 cm)
Package 1 Length	19.20 in (48.768 cm)
Unit Type of Package 2	PAL
Number of Units in Package 2	54
Package 2 Weight	596.21 lb(US) (270.438 kg)
Package 2 Height	40.00 in (101.6 cm)
Package 2 width	40.00 in (101.6 cm)
Package 2 Length	48.00 in (121.92 cm)

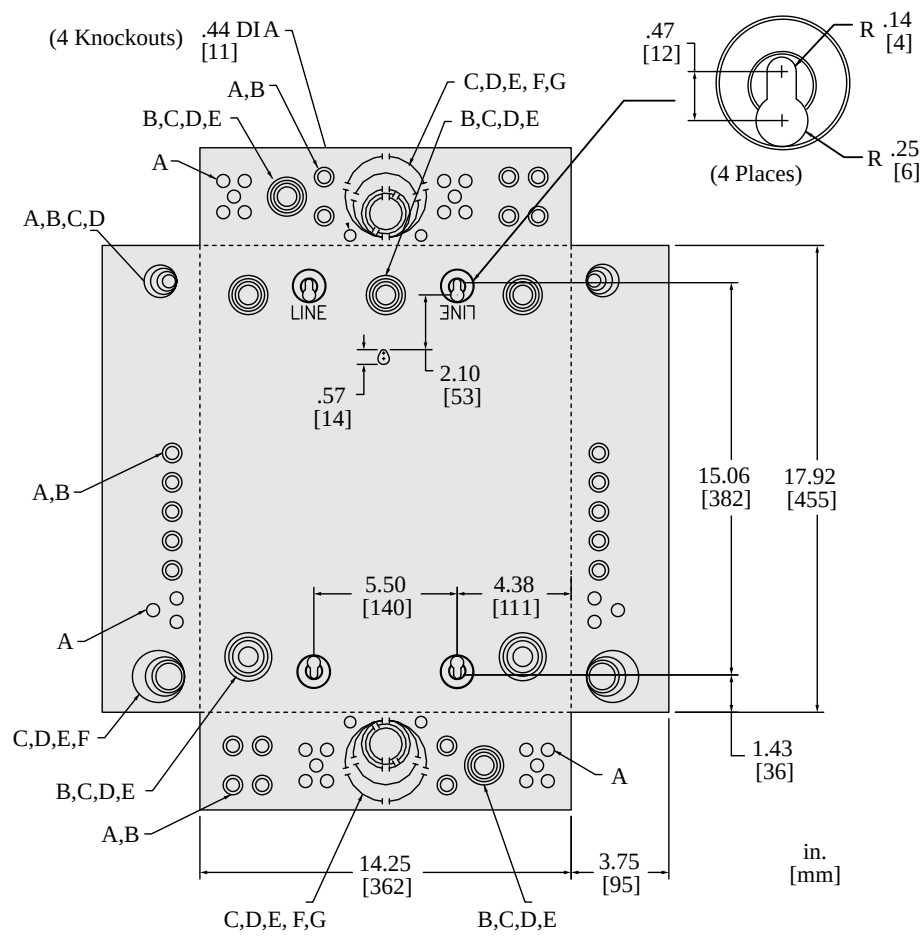
Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
REACH Regulation	REACH Declaration
REACH free of SVHC	Yes
EU RoHS Directive	Compliant EU RoHS Declaration
Toxic heavy metal free	Yes
Mercury free	Yes
RoHS exemption information	Yes
China RoHS Regulation	China RoHS declaration Pro-active China RoHS declaration (out of China RoHS legal scope)

Contractual warranty

Warranty	18 months
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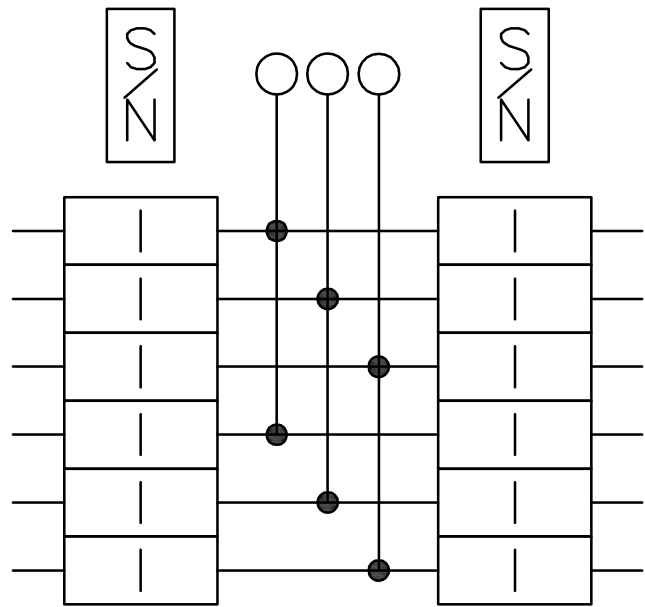
Dimensions



KNOCKOUTS		
SYMBOL	CONDUIT SIZE	
	IN	MM
A	.50	13
B	.75	19
C	1.00	25
D	1.25	32
E	1.50	38
F	2.00	51
G	2.50	64

All dimensions are approximate. Also refer to technical drawings and documentation.

Wiring Diagram



Q0312L125G
Q0312L100GNYC

HOTflow[®] Heating System

CSM



CSM Style B shown
with flange pump.



CSM Style A shown
with union pump.



HEAVY DUTY HEATING

The CSM features the most powerful pump (10 gpm flow) and most powerful heating element options (up to 12 kW) in the HOTflow lineup. The CSM's heating power in an energy efficient system is ideal for replacing costly convection-based heaters in large-engine installations up to 100 L displacement.



MULTIPLE CONFIGURATIONS

The CSM lineup is equipped to meet a wide array of conditions, including power source requirements and agency certifications. Whatever your power or heating needs, there's a CSM to meet your specific heating system application.



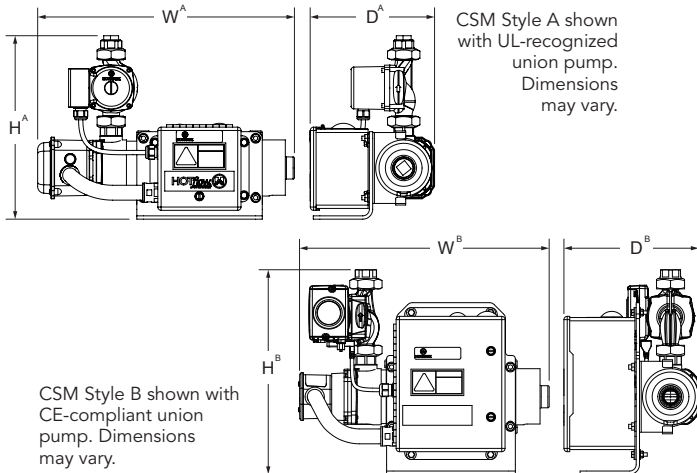
CONTROLS & AUTOMATION OPERATION

The CSM's control box allows for easy power connections and enables automatic heater operation, eliminating the need for additional customer-supplied control components.



SINGLE HEATER SOLUTION

The CSM's power and pump-driven forced circulation provides superior heat distribution, making the CSM a viable option to replace paired or multiple convection-based heaters – improving heating performance while reducing maintenance costs.



Style A			
Height* (H ^A)	Width (W ^A)	Depth (D ^A)	Weight
15.0"	19.4"	9.5"	37 lbs
383 mm	493 mm	242 mm	16.8 kg

Style B			
Height* (H ^B)	Width (W ^B)	Depth (D ^B)	Weight
17.0"	19.4"	9.5"	54 lbs
434 mm	493 mm	242 mm	24.5 kg

* Height values are stated for flange connection pump. If union pump is installed, the model's height will decrease by approximately 1.5" (38 mm).

System	
Phase	single-phase (1 Ø) three-phase (3 Ø)
Voltage (60 Hz)	120 V 208 V 240 V 440 V 480 V 575 V
Voltage (50 Hz)	230 V 400 V
Control Box Ingress	NEMA 4/IP66
Motor Ingress	NEMA 2 (UL-listed)/IP44 (CE-compliant)
Min./Max. Ambient Temp.	-4 – 104 °F (-20 – 40 °C)
Certification	UL/C-US listed models available (E250789) CE-compliant models available

Coolant	
Fluid Type	Water Coolant mix (50% water/50% glycol)
Heat Power	3 kW 6 kW 9 kW 10.5 kW 12 kW
Temp. Control	Fixed, 100–120 °F (38–49 °C)
Pump Power	97 W (60 Hz) / 70 W (50 Hz)
Flow	10 gpm @ 10 ft WC (37.9 L/min @ 3 m WC)
Max. Pressure	125 psi (860 kPa)
Pressure Loss	0.2 psi (1.5 kPa)
Inlet/Outlet	1" NPT

Ordering Information

CSM

Engine Displacement	Power Supply			Heating System			
	V	Ø	Hz	kW	Amps	Style	Model Number
1000–1500 CID 15–25 L	120	1	60	3	26.3	A	CSM10301-000
	208	1	60	3	15.1	A	CSM10308-000
	208	3	60	3	8.7	B	CSM30308-000
	230	1	50	3	13.7	A	**CSM1030J-5A0
	240	1	60	3	13.1	A	CSM10302-000
	400	3	50	3	4.9	B	**CSM3030A-5A0
	480	1	60	3	3.8	B	CSM10304-000
	480	3	60	3	4.4	B	CSM30304-000
1500–3000 CID 25–50 L	208	1	60	6	29.6	A	CSM10608-000
	208	3	60	6	17.1	B	CSM30608-000
	230	1	50	6	26.7	A	**CSM1060J-5A0
	240	1	60	6	25.6	A	CSM10602-000
	400	3	50	6	8.9	B	**CSM3060A-5A0
	440	3	60	6	8.1	B	**CSM3060F-5A1
	480	1	60	6	12.8	B	CSM10604-000
	480	3	60	6	7.4	B	CSM30604-000
3000–4500 CID 50–75 L	575	3	60	6	6.2	B	CSM30605-000
	208	1	60	9	44.0	A	CSM10908-000
	208	3	60	9	25.4	B	CSM30908-000
	230	1	50	9	39.8	A	**CSM1090J-5A0
	240	1	60	9	38.1	A	CSM10902-000
	400	3	50	9	13.2	B	**CSM3090A-5A0
	440	3	60	9	12.2	B	**CSM3090F-5A1
	480	1	60	9	19.1	B	CSM10904-000
4500–6000 CID 75–100 L	480	3	60	9	11.0	B	CSM30904-000
	575	3	60	9	9.2	B	CSM30905-000
	208	1	60	10.5	51.2	B	CSM11058-000
	208	3	60	12	33.7	B	CSM31208-000
	230	1	50	12	52.8	B	**CSM1120J-5A0
	240	1	60	12	50.6	B	CSM11202-000
	400	3	50	12	17.5	B	**CSM3120A-5A0
	440	3	60	12	15.9	B	**CSM3120F-5A2
	480	1	60	12	25.3	B	CSM11204-000
	480	3	60	12	14.6	B	CSM31204-000
	575	3	60	12	12.2	B	CSM31205-000

** – CE-compliant/union pump configuration

Other voltages available. Consult the factory.

Options shown represent typical tested or certified configurations. Additional options or configurations may be available. For assistance with your heating system application, contact HOTSTART at 509.536.8660 or sales@hotstart.com.

Turbine Series - 791000FHV

FUEL

Specifications:

Height: 21.32" (54.15 cm)
Width: 21.44" (54.47 cm) with Bracket
Depth: 11.7" (29.7 cm) with Bracket
Weight: 52.0 lbs (24.0 kg)
Ports: 3/4"-14 NPT
Service Clearance (Top): 10.0" (25.4 cm)
Vacuum Installation Recommended
Maximum Pressure: 15 psi (1.03 bar)
Max Flow Rate: 540 gph (2044 lph)

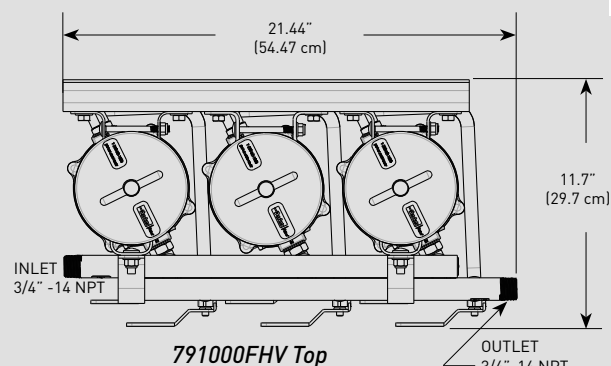
Create a Part Number

Assembly Type	Filter Model	Model Type	Heater Option	Filtration Rating
Triple Assembly - Valves 180/360/540 gph Flow Rate	Turbine Model 180 gph Flow Rate (X3)	Valves	24 volt **	2 micron 10 micron 30 micron
79	1000FH	V	324	2 10 30

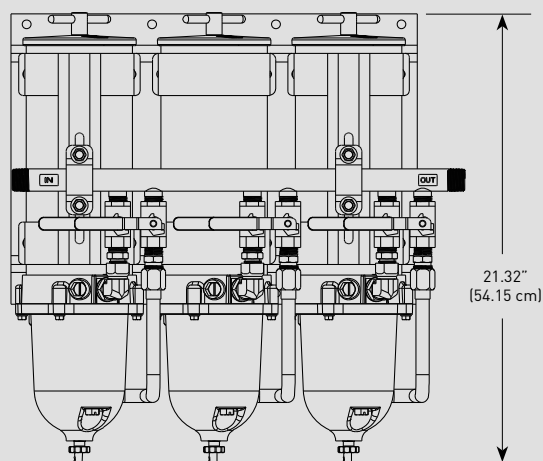
** - Heater only available with 30 micron assemblies

ASSEMBLY	DESCRIPTION
791000FHV2	Triple Manifold 1000 Turbine Assy., 2 micron Filter
791000FHV10	Triple Manifold 1000 Turbine Assy., 10 micron Filter
791000FHV30	Triple Manifold 1000 Turbine Assy., 30 micron Filter
791000FHV32430	Triple Manifold 1000 Turbine Assy., 24V Heater, 30 micron Filter

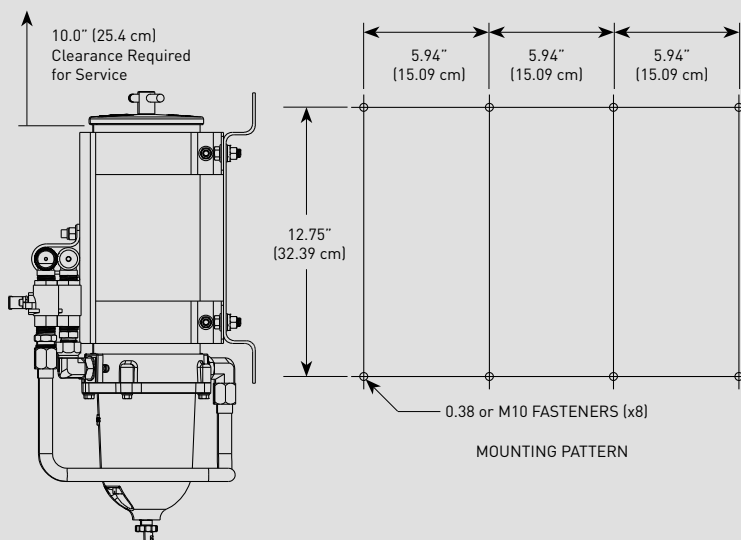
Dimensions:



791000FHV Top



791000FHV Front



791000FHV Profile

MOUNTING PATTERN

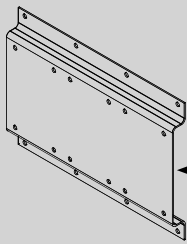


TRIPLE ASSEMBLIES

PARTS

Turbine Series - 791000FHV

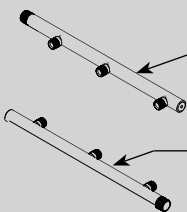
1



1A

1B

2



2A

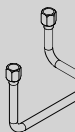
2B

3



3A

4



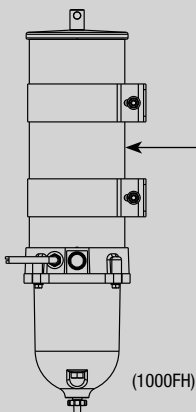
4A

5



5A

6



6A

See **RSL0292**
For 1000FH Parts Breakdown

Part # Description

1A		Mounting Bracket - <i>Contact Technical Support</i>
1B		Manifold Assembly Bracket - <i>Contact Technical Support</i>

2A	19460	Inlet Manifold Tube (3/4"-14 NPT) - (Tan)
2B	19461	Outlet Manifold Tube (3/4"-14 NPT) - (Tan)

3A	RK 11073	Ball Valve Assembly (uses 6)
-----------	-----------------	------------------------------

4A		Manifold tube - <i>Contact Technical Support</i>
-----------	--	--

5A	11-1761	U-bracket (uses 2)
-----------	----------------	--------------------

6A		Turbine Fuel Filter - 1000FH Series (Uses 3) See Cutsheet RSL0292 for available Parts and Accessories
-----------	--	---

Accessories and Parts Available (Not Shown)

7A	RK 11-1952	Complete Seal Service Kit - 1000FH Series Filters (Requires 3)
-----------	-------------------	--

	RK 11-1404	Complete Seal Service Kit - 1000 Series Filters For FG and Older Models (Requires 3)
--	-------------------	--

7B	RK30880E	WIF Sensor and Light Kit - 1/2"-20 UNF *
-----------	-----------------	--

	RK33802	WIF Probe Kit - 1/2"-20 UNF - Two Wire Pigtail * Water Detection Module Required - Use 7C
--	----------------	---

7C	RK 14329 RK 14321	Water Detection Module - 12 vdc Water Detection Module - 24 vdc
-----------	------------------------------------	--

8A		Bowl Gasket - Included in 7A
-----------	--	-------------------------------------

8B	RK 11-1938	Bowl Kit - Includes 8A, 8C & 8D
-----------	-------------------	--

8C	RK 20126	Bowl Plug (O-ring Included in 7A)
-----------	-----------------	--

8D		Self-venting Drain (O-ring Included in 7A)
-----------	--	---

9A	2020N-02 2020N-10 2020N-30	1000FH Replacement Element 2 micron (uses 3) 1000FH Replacement Element 10 micron (uses 3) 1000FH Replacement Element 30 micron (uses 3)
-----------	---	--

* Note: If all 3 units are used simultaneously, one probe or sensor can be used. If units are used as backups, then a probe or sensor should be installed in each bowl. Multiple probes can be wired in parallel to a single detection module.



Online Link
Turbine Series Selector



Online Link
Turbine Series
Replacement Parts Selector



Aries Manufacturas Industriales, S.A. de C.V.

EQUIPOS DE CALENTAMIENTO ELÉCTRICO
RESISTENCIAS ELÉCTRICAS CALEFACTORAS EN GENERAL
SENSORES DE TEMPERATURA • CABLES PARA ALTA TEMPERATURA • PIROMETRIA
ASESORES

Santa María No. 30 Colonia Apatlaco, Iztapalapa CP 09430 México DF

Ventas 01 (55) 5633 9790 Fax 01 (55) 5633 1863

ventas@ariesmi.com ariesmi@prodigy.net.mx www.ariesmi.com

STRIP PASTE TYPE ELECTRIC RESISTANCE HEATERS

The Strip Paste type resistors are heating elements built with Nickel Chrome wire coils which are encapsulated in a ceramic paste made with Magnesium Oxide with internal ducts distributed along the length where the coil is introduced along the zigzag line giving it the characteristic of a good heat transfer and operate at temperatures up to 550 °C.



Operational performance

- Stainless steel lining for temperatures up to 550 °C

- Watts densities up to 12 W/cm².

Features and Benefits

- Nickel Chrome wire coil centered on the heater.

Ensures and evenly distributed heat.

- Stainless Steel Lining

For operation in environments up to 550 °C

- Screw terminals welded to the heating wire For a trouble-free and robust connection.

- Standardized width and rigid thickness of 38.1 mm and 9.5 mm respectively

Allowing it to fit in a variety of applications

- Lengths varying in a range from 140 to 1200 mm (4.5 to 1200 mm)

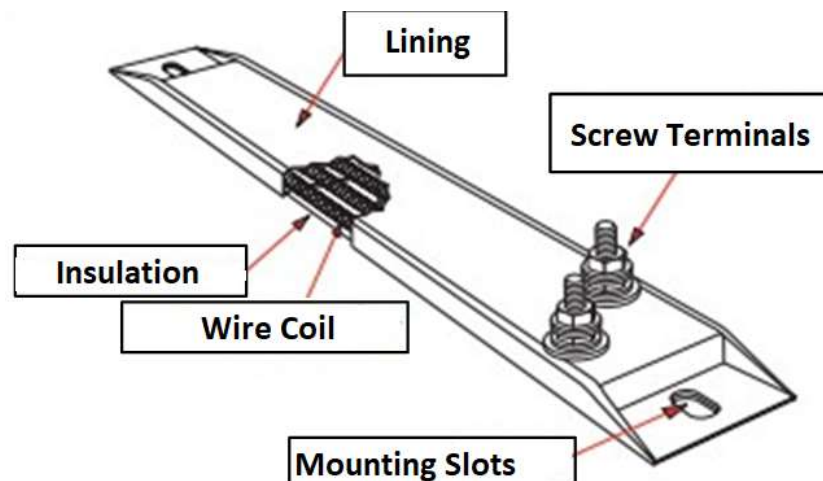
Gives flexibility to attach to various surfaces

- Attachment eyelets

Provided at each end for easy attachment

Frequent uses

- Keeping food warm.
- Anti-humidity protection.
- Heating of Tanks and Rollers.
- Packaging.
- Mold heating.
- Autoclaves
- Baking



2484 SERIES BATTERY DISCONNECT SWITCHES

40-175A • 36V • Single Pole, Single Throw

 **Cole Hersee®**
 A Littelfuse® Brand



Description

2484 Series Battery Disconnect Switches are 36V Single Pole, Single Throw (SPST) manual disconnect switches that can be used to disconnect the battery from the vehicle electrical system. Disconnecting the battery from the electrical system prevents potential thermal events and ensures system shut down during maintenance or emergency. Battery disconnect switches also prevent parasitic loads from draining the battery during inactivity.

Web Resources

Download 2D print and technical resources at:
littelfuse.com/2484

Ordering Information

Features and Benefits

- Rugged steel case
- Silver plated contacts for high conductivity and low contact resistance
- Removable Hencol key for security
- Anti-rotation locator pin option enables ease of mounting
- O-ring and gasket sealing options

Specifications Overview

Voltage Rating:	36V DC
Circuitry:	Single Pole, Single Throw
Housing:	Plated Steel

Applications

- Heavy Duty Truck
- Construction
- Emergency Vehicles
- Bus/Transit
- Agriculture

BULK PART NUMBER	BOXED PART NUMBER	BLISTER PART NUMBER	DESCRIPTION	AMPERAGE	MAX INPUT CURRENT	CONTACTS	MOUNTING
2484 *	2484-BX	2484-BP	Battery Disconnect Switch 40A 36V SPST UL Listed	40A	250A	Two copper studs (3/8-24)	—
2484-02 *	2484-02-BX	—	Battery Disconnect Switch 175A 36V SPST with Hencol Key	175A	1000A	Two silver plated copper studs (3/8-24)	Locator Pin
2484-03 *	2484-03-BX	—	Battery Disconnect Switch 175A 36V SPST with Hencol Key, O-Ring Seal	175A	1000A	Two silver plated copper studs (3/8-24)	Locator Pin
2484-06 *	2484-06-BX	—	Battery Disconnect Switch 175A 36V SPST with Sealing Throughout	175A	1000A	Two silver plated copper studs (3/8-24)	—
2484-09 *	2484-09-BX	—	Battery Disconnect Switch 175A 36V SPST	175A	1000A	Two copper studs (3/8-24)	—
2484-16 *	2484-16-BX	2484-16-BP	Battery Disconnect Switch 175A 36V SPST UL Listed	175A	800A	Two silver plated copper studs (3/8-24)	—
2484-51	—	—	Battery Disconnect Switch 175A 36V SPST without Lever	175A	—	Two silver laminated brass studs (3/8-24)	Locator Pin
2484-A *	2484-A-BX	—	Battery Disconnect Switch 175A 36V SPST	175A	1000A	Two silver laminated brass studs (3/8-24)	—

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Littelfuse:

[2484](#) [2484-06](#) [2484-A](#) [2484-16](#) [2484-09](#) [2484-19](#) [2484-02](#) [2484-03](#)

SECTION 2



Oil Heaters

Oil Heaters up to 277 V AC meet recognized CSA standards for safety or performance.

To specify temperature range of thermostat, insert code from chart in place of the **XX** in model number.

Example:

Desired Temp. Range 80°–100°F
Model Number: OW2121**XX**-000
Order as: OW2121**08**-000

Temperature Range		Code
ON	OFF	
60°F (16°C)	80°F (27°C)	06
80°F (27°C)	100°F (38°C)	08
100°F (38°C)	120°F (49°C)	10

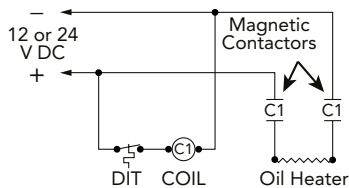
See p.21 for remote thermostat assembly part numbers.



Oil heater with Y-cord and remote thermostat.
Complete with NEMA plug for 120/240 V only.

DC Oil Heaters 12 V and 24 V

When used with a thermostat control, all DC oil heaters must use a DC relay.



12 V DC/24 V DC CONTROL BOXES

25 Amps Maximum	12V 24V	JBMC330DC-12V JBMC330DC-24V
--------------------	------------	--------------------------------

Use a thermostat with all lube oil heaters to protect the oil from overheating. Lube oil heaters must always be installed in the sump with the entire heater submerged below the oil level at all times. See page 21 for remote thermostat part numbers.

***NOTE:** If heating gear oil (medium weight viscosity), HOTSTART recommends using low watt density heaters.

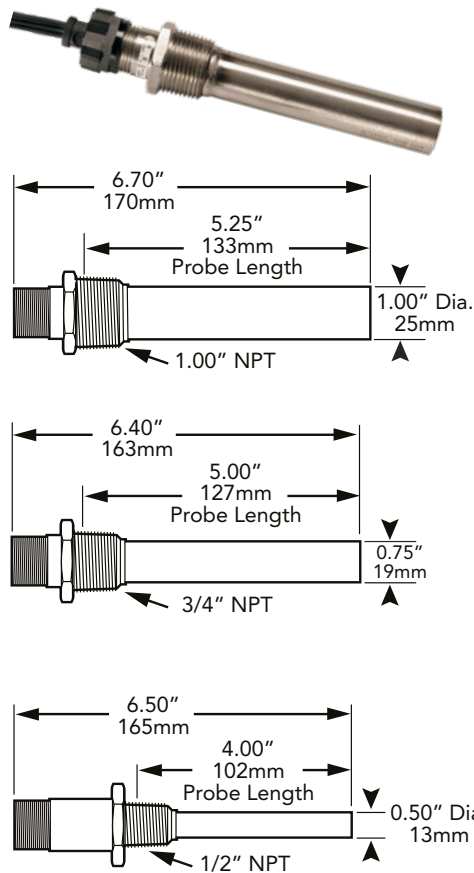
Oil Capacity	*Weathertight Heater Only	Weathertight With Thermostat	*Hazardous Location Heater Only	Volts	Watts	Amps	Watts/Sq Inch
3/8" N.P.T. THREAD WITH A 2 1/8" (54mm) PROBE LENGTH							
2 qt. (2L) or Less	OW005100-000	—	—	120	50	.4	20.0
	OW005200-000	—	—	240	50	.2	20.0
1/2" N.P.T. THREAD WITH A 4" (101mm) PROBE LENGTH							
2 - 6 qt. 2 - 5.7L	OW212100-000	OW2121XX-000	OE212100-000	120	125	1.0	24.6
	OW212200-000	OW2122XX-000	OE212200-000	240	125	.5	24.6
3/4" N.P.T. THREAD WITH A 5" (127mm) PROBE LENGTH							
1 - 5 gal. 3.8 - 19L	OW415100-000	OW4151XX-000	OE415100-000	120	150	1.3	14.6*
	OW415200-000	OW4152XX-000	OE415200-000	240	150	.6	14.6*
5 - 15 gal. 19 - 57L	OW430100-000	OW4301XX-000	OE430100-000	120	300	2.6	29.3
	OW430800-000	OW4308XX-000	OE430800-000	208	225	1.1	22.0
	OW430200-000	OW4302XX-000	OE430200-000	240	300	1.2	29.3
1" N.P.T. THREAD WITH A 5 1/4" (133mm) PROBE LENGTH							
1 - 5 gal. 3.8 - 19L	OW615100-000	OW6151XX-000	OE615100-000	120	150	1.3	10.7*
	OW615200-000	OW6152XX-000	OE615200-000	240	150	.6	10.7*
5 - 15 gal. 19 - 57L	OW630100-000	OW6301XX-000	OE630100-000	120	300	2.6	21.4
	OW630800-000	OW6308XX-000	OE630800-000	208	375	1.8	28.0
	OW630200-000	OW6302XX-000	OE630200-000	240	300	1.2	21.4
	—	—	OE630700-000	277	265	1.0	19.0
	—	—	OE630300-000	380	300	1.0	21.4
	—	—	OE630400-000	480	300	0.6	21.4
1" N.P.T. THREAD WITH A 11 7/16" (297mm) PROBE LENGTH							
15 - 30 gal. 57 - 113L	—	—	OE650100-100	120	500	4.2	15.0
	—	—	OE650200-100	240	500	2.1	15.0
	—	—	OE650400-100	480	500	1.0	15.0
	—	—	OE650500-100	575	500	0.9	15.0

*Weathertight heater only models are furnished with a 4' (1.2m) oil- and heat-resistant power cord without plug. Hazardous Location heater only models are furnished with 18" (457mm) of lead wire for connection to the power leads in an approved splice box.

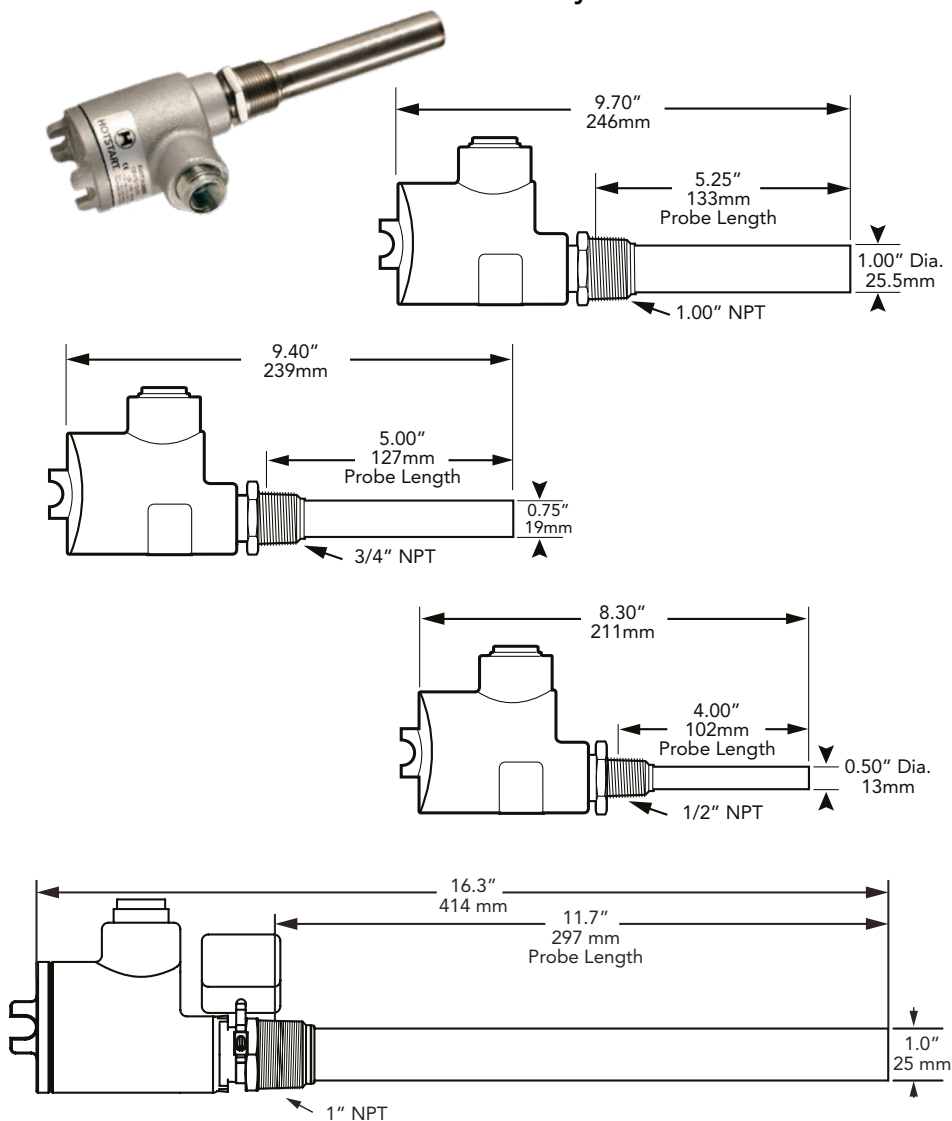
Oil Capacity	Volts	Watts	1/2" NPT with 4" (101mm) Probe Length	3/4" NPT with 4 7/8" (124mm) Probe Length	1" NPT with 5 3/8" (136mm) Probe Length	Amps	Watts Per Square Inch
2 qt. 2.0L or Less	12	75	OW207900-012	OW407900-012	—	6.3	1/2" — 14.7* WSI 3/4" — 7.3* WSI
	24	75	—	OW407900-024	—	3.1	
2-6 qt. 2.0-2.7L	24	125	OW212900-024	—	—	5.2	24.6 WSI
1-5 gal. 3.8-19L	12	150	—	OW415900-012	OW615900-012	12.5	3/4" — 14.6* WSI 1" — 10.7* WSI
	24	150	—	OW415900-024	OW615900-024	6.3	
5-15 gal. 19-57L	12	300	—	—	OW630900-012	25.0	3/4" — 29.3 WSI 1" — 21.4 WSI
	24	300	—	OW430900-024	OW630900-024	12.5	
15-30 gal. 57-113L	24	500	—	—	OW650900-024	20.8	35.7 WSI

12 V DC and 24 V DC oil heaters can be powered directly from the battery, but will drain the battery very rapidly unless charged by an alternator or generator.

Weathertight OW Series Heater only



Hazardous Location OE Series Heater only



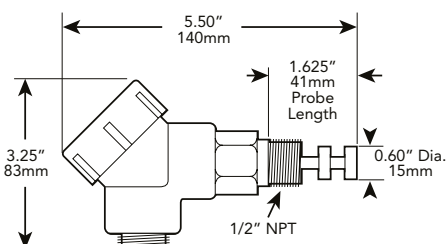
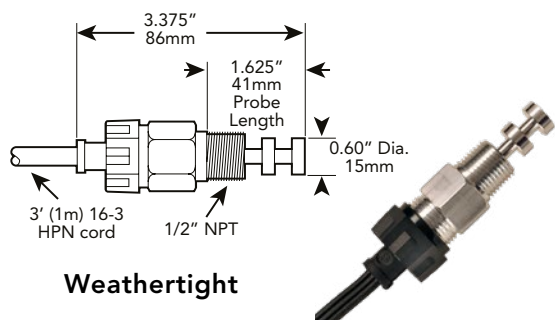
REMOTE THERMOSTATS for OIL HEATERS

Weathertight	Hazardous Location	Temperature Range		Sensing Unit	Thread Size
		ON	OFF		
DIT68	DIT68EP	60°F (16°C)	80°F (27°C)	LSU-6	1/2" NPT
DIT810	DIT810EP	80°F (27°C)	100°F (38°C)	LSU-8	1/2" NPT
DIT1012	DIT1012EP	100°F (38°C)	120°F (49°C)	LSU-10	1/2" NPT
DIT1214	DIT1214EP	120°F (49°C)	140°F (60°C)	LSU-12	1/2" NPT

Switch Capacity

120 V - 15amp
 208 V - 10amp
 240 V - 10amp
 277 V - 10amp

12 V DC } Pilot
 24 V DC } Duty
 Only



Weathertight Industrial Immersion Heaters

2" NPT Thread



NEMA 4

V-Clamp Threadless Design



NEMA 4

Oil Capacity	Fitting Style		Probe Length	Volts	Watts	Amps	Watts/ Sq. In.
	2" NPT Thread	V-Clamp Threadless					
SINGLE PHASE							
30 - 45 Gallons 113-170L	E01011W-15XA-00	E01011W-15XV-00	12" (305 mm)	120	1000	8.3	17.0
	E01081W-15XA-00	E01081W-15XV-00	12" (305 mm)	208	1000	4.8	17.0
	E01021W-15XA-00	E01021W-15XV-00	12" (305 mm)	240	1000	4.2	17.0
45 - 60 Gallons 170-227L	E01511W-15XA-00	E01511W-15XV-00	12" (305 mm)	120	1500	12.5	17.0
	E01581W-15XA-00	E01581W-15XV-00	12" (305 mm)	208	1500	7.2	17.0
	E01521W-15XA-00	E01521W-15XV-00	12" (305 mm)	240	1500	6.3	17.0
60 - 90 Gallons 227-341 L	E02011W-15XA-00	E02011W-15XV-00	18" (457 mm)	120	2000	16.7	14.0
	E02081W-15XA-00	E02081W-15XV-00	18" (457 mm)	208	2000	9.6	14.0
	E02021W-15XA-00	E02021W-15XV-00	18" (457 mm)	240	2000	8.4	14.0
	E02041W-15XA-00	E02041W-15XV-00	18" (457 mm)	480	2000	4.2	14.0
THREE PHASE							
30 - 45 Gallons 113-170L	E01083W-10XA-00	E01083W-10XV-00	12" (305 mm)	208	1000	2.8	11.0
	E01023W-10XA-00	E01023W-10XV-00	12" (305 mm)	240	1000	2.4	11.0
	E01033W-10XA-00	E01033W-10XV-00	12" (305 mm)	380	1000	1.5	11.0
	E01043W-10XA-00	E01043W-10XV-00	12" (305 mm)	480	1000	1.2	11.0
45 - 60 Gallons 170-227L	E01583W-15XA-00	E01583W-15XV-00	12" (305 mm)	208	1500	4.2	17.0
	E01523W-15XA-00	E01523W-15XV-00	12" (305 mm)	240	1500	3.6	17.0
	E01533W-15XA-00	E01533W-15XV-00	12" (305 mm)	380	1500	2.3	17.0
	E01543W-15XA-00	E01543W-15XV-00	12" (305 mm)	480	1500	1.8	17.0
60 - 90 Gallons 227-341 L	E02083W-15XA-00	E02083W-15XV-00	18" (457 mm)	208	2000	5.6	14.0
	E02023W-15XA-00	E02023W-15XV-00	18" (457 mm)	240	2000	4.8	14.0
	E02033W-15XA-00	E02033W-15XV-00	18" (457 mm)	380	2000	3.0	14.0
	E02043W-15XA-00	E02043W-15XV-00	18" (457 mm)	480	2000	2.4	14.0

Heaters with Thermostats

To specify temperature range of thermostat, insert numerical code from chart in place of the **X** in model number.

Example:

Desired Temp. Range: 60° – 80°F

Model Number: E01011W-15XA-00

Order as: E01011W-156A-00

Temperature Range

ON

OFF

Numerical Code

40°F (4°C)	60°F (16°C)	4
60°F (16°C)	80°F (27°C)	6
80°F (27°C)	100°F (38°C)	8
100°F (38°C)	120°F (49°C)	1

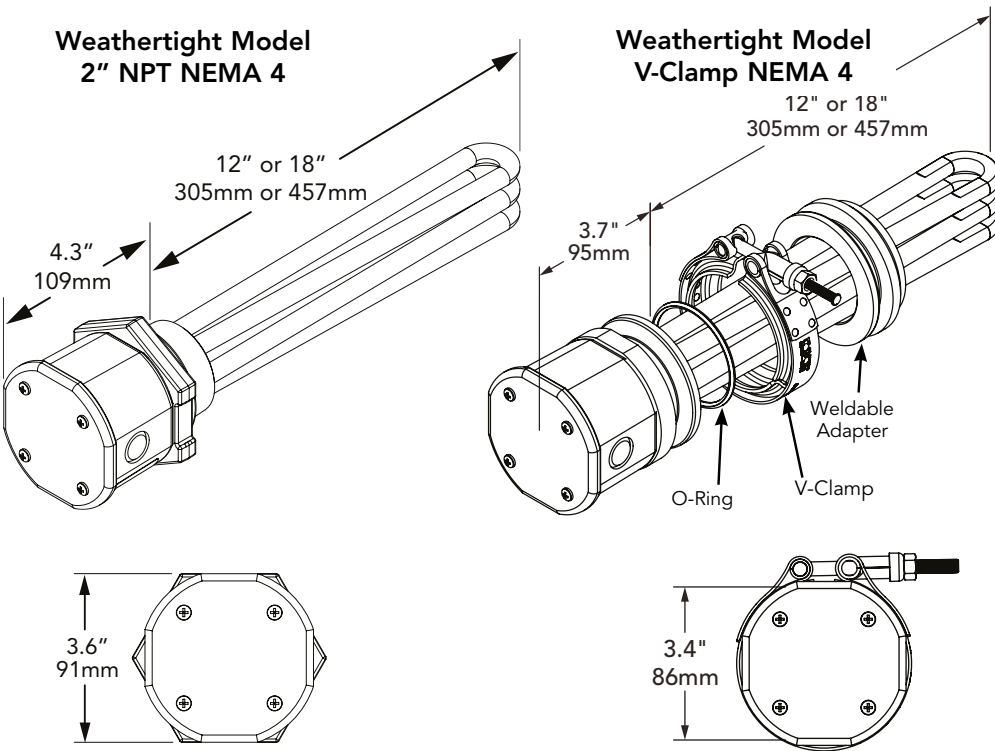
Industrial Immersion Heaters are also available for coolants and other process heating. Call HOTSTART for information on these heating solutions.

Models for larger capacities than shown are available. Call HOTSTART to speak with a sales representative to learn more about weathertight forced circulation oil heating systems.

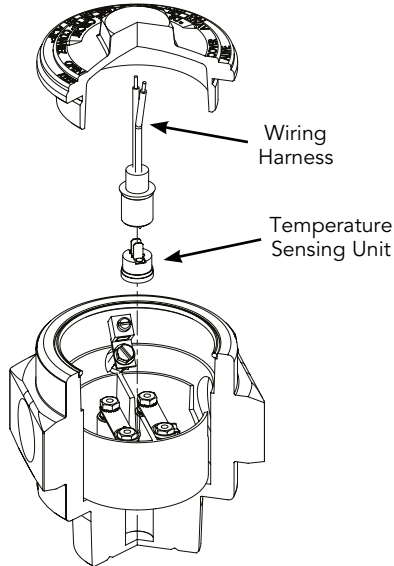
OSM Model



HOTSTART immersion heaters include a fixed-setting, built-in thermostat.



Fixed Thermostat Assembly



TEMPERATURE RANGE		Sensing Unit
ON	OFF	
40°F (4°C)	60°F (16°C)	HLC-4
60°F (16°C)	80°F (27°C)	HLC-6
80°F (27°C)	100°F (38°C)	HLC-8
100°F (38°C)	120°F (49°C)	HLC-10

ELECTRICAL RATING

15 Amps at 120 Vac
10 Amps at 240 Vac
10 Amps at 277 Vac

Replacement thermostat assemblies include temperature sensing unit and wiring harness.

Weathertight Industrial Immersion Heaters

Element assembly includes **O-ring** only.

Installation kit sold separately.

V-CLAMP INSTALL KIT

Part Number	Parts Included
VC-SK	Steel weldable adapter V-Clamp O-Ring

NOTES:

On applications where level of fluid is subject to change, a liquid level switch mounted a minimum of 3–4" (76–102mm) above element is recommended. **Liquid level switch is not included with heater.**

All 380 V and 480 V heaters must be used in conjunction with contactor and control transformer.

All three phase models must be used with a contactor. See page 30.

Higher or lower temperature ranges are available. Consult HOTSTART.

Hazardous Location Immersion Heaters

2" NPT Thread



Certifications:

Class I Div. 1 Group C & D T3A

Class I Zone 1 Group IIB T3

IECEX UL 18.0071X DEMKO 18 ATEX 1943X Rev. 0

Ⓜ II 2 G Ex db IIB T3 Gb & Ex db IIB T3 Gb CE 0539

Ambient temp. -40 °C +40 °C IP66 NEMA Type 4

V-Clamp Threadless Design



Certifications:

Class I Div. 1 Group C & D T3A

Class I Zone 1 Group IIB T3

IECEX UL 18.0071X DEMKO 18 ATEX 1943X Rev. 0

Ⓜ II 2 G Ex db IIB T3 Gb & Ex db IIB T3 Gb CE 0539

Ambient temp. -40 °C +40 °C IP66 NEMA Type 4

Oil Capacity	Fitting Style		Probe Length	Volts	Watts	Amps	Watts/ Sq. In.
	2" NPT Thread	V-Clamp Threadless					
SINGLE PHASE							
30 - 45 Gallons 113-170L	E01011E-15XA-00 E01081E-15XA-00 E01021E-15XA-00	E01011E-15XV-00 E01081E-15XV-00 E01021E-15XV-00	12" (305 mm) 12" (305 mm) 12" (305 mm)	120 208 240	1000 1000 1000	8.3 4.8 4.2	17.0 17.0 17.0
45 - 60 Gallons 170-227L	E01511E-15XA-00 E01581E-15XA-00 E01521E-15XA-00	E01511E-15XV-00 E01581E-15XV-00 E01521E-15XV-00	12" (305 mm) 12" (305 mm) 12" (305 mm)	120 208 240	1500 1500 1500	12.5 7.2 6.3	17.0 17.0 17.0
60 - 90 Gallons 227-341 L	E02011E-15XA-00 E02081E-15XA-00 E02021E-15XA-00 E02041E-15XA-00	E02011E-15XV-00 E02081E-15XV-00 E02021E-15XV-00 E02041E-15XV-00	18" (457 mm) 18" (457 mm) 18" (457 mm) 18" (457 mm)	120 208 240 480	2000 2000 2000 2000	16.7 9.6 8.4 4.2	14.0 14.0 14.0 14.0
THREE PHASE							
30 - 45 Gallons 113-170L	E01083E-10XA-00 E01023E-10XA-00 E01033E-10XA-00 E01043E-10XA-00	E01083E-10XV-00 E01023E-10XV-00 E01033E-10XV-00 E01043E-10XV-00	12" (305 mm) 12" (305 mm) 12" (305 mm) 12" (305 mm)	208 240 380 480	1000 1000 1000 1000	2.8 2.4 1.5 1.2	11.0 11.0 11.0 11.0
45 - 60 Gallons 170-227L	E01583E-15XA-00 E01523E-15XA-00 E01533E-15XA-00 E01543E-15XA-00	E01583E-15XV-00 E01523E-15XV-00 E01533E-15XV-00 E01543E-15XV-00	12" (305 mm) 12" (305 mm) 12" (305 mm) 12" (305 mm)	208 240 380 480	1500 1500 1500 1500	4.2 3.6 2.3 1.8	17.0 17.0 17.0 17.0
60 - 90 Gallons 227-341 L	E02083E-15XA-00 E02023E-15XA-00 E02033E-15XA-00 E02043E-15XA-00	E02083E-15XV-00 E02023E-15XV-00 E02033E-15XV-00 E02043E-15XV-00	18" (457 mm) 18" (457 mm) 18" (457 mm) 18" (457 mm)	208 240 380 480	2000 2000 2000 2000	5.6 4.8 3.0 2.4	14.0 14.0 14.0 14.0

Heaters with Thermostats

To specify temperature range of thermostat, insert numerical code from chart in place of the **X** in model number.

Example:

Desired Temp. Range: 60° – 80°F

Model Number: E01011E-15XA-00

Order as: E01011E-156A-00

Temperature Range

ON OFF

40°F (4°C)	60°F (16°C)
60°F (16°C)	80°F (27°C)
80°F (27°C)	100°F (38°C)
100°F (38°C)	120°F (49°C)

Numerical Code

4
6
8
1

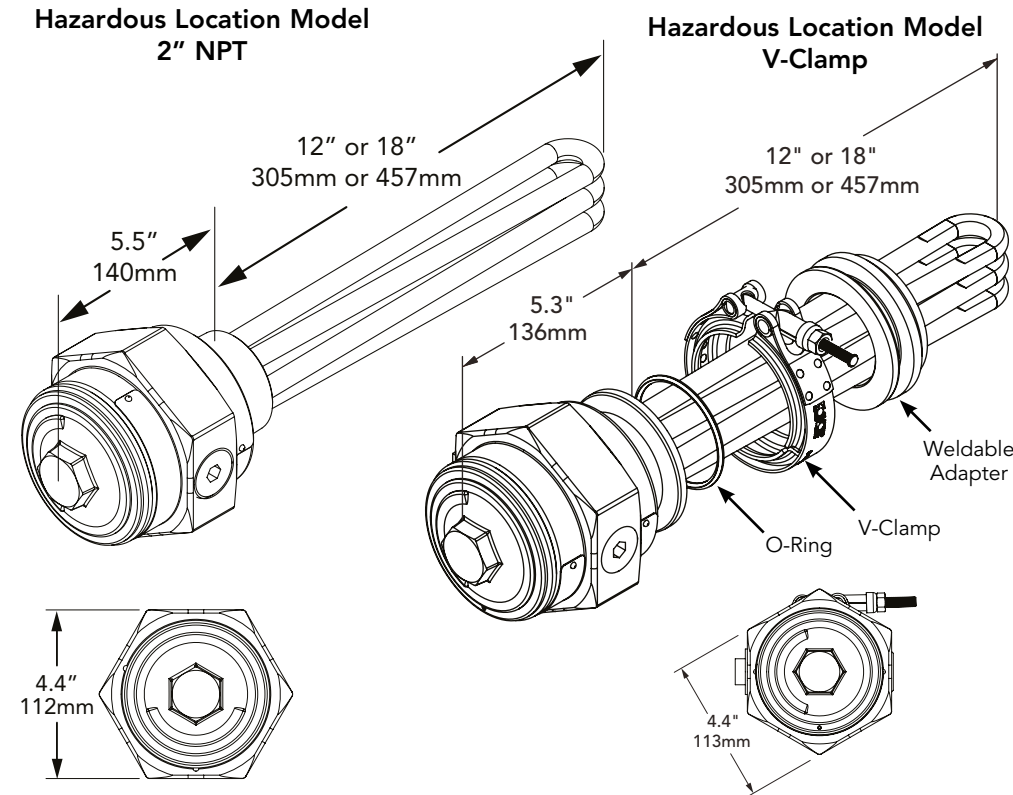
Industrial Immersion Heaters are also available for coolants and other process heating. Call HOTSTART for information on these heating solutions.

Models for larger capacities than shown are available. Call HOTSTART to speak with a sales representative to learn more about hazardous location forced circulation oil heating systems.

OSE Model



HOTSTART hazardous location immersion heaters are available with built in, fixed thermostat or RTD/Thermocouple.



Hazardous Location Immersion Heaters

Element assembly includes **O-ring and V-Clamp**.

Weldable adaptor sold separately.

Part Number	Parts Included
VC-STA	Steel weldable adaptor

NOTES:

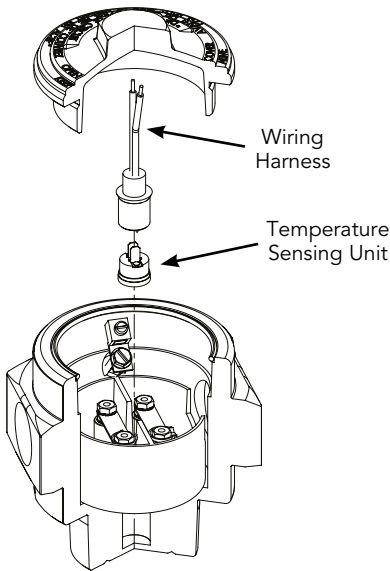
On applications where level of fluid is subject to change, a liquid level switch mounted a minimum of 3–4" (76–102mm) above element is recommended. **Liquid level switch is not included with heater.**

All 380 V and 480 V heaters must be used in conjunction with contactor and control transformer.

All three phase heaters must be used with a contactor. See page 30.

Higher or lower temperature ranges are available. Consult HOTSTART.

Fixed Thermostat Assembly



TEMPERATURE RANGE		Sensing Unit
ON	OFF	
40°F (4°C)	60°F (16°C)	HLC-4
60°F (16°C)	80°F (27°C)	HLC-6
80°F (27°C)	100°F (38°C)	HLC-8
100°F (38°C)	120°F (49°C)	HLC-10

ELECTRICAL RATING	
15 Amps at 120 Vac	
10 Amps at 240 Vac	
10 Amps at 277 Vac	

Replacement thermostat assemblies include temperature sensing unit and wiring harness.

PRODUCT-DETAILS

CEPY1-2001

ENCLOSURE CEPY1-2001



General Information

Extended Product Type	CEPY1-2001
Product ID	1SFA619821R2001
EAN	7320500358146
Catalog Description	ENCLOSURE CEPY1-2001
Long Description	Assembled Enclosure with Shroud - 40mm Mushroom Emergency Stop - Twist Release - 2NC - Horisontally mounted

Ordering

Minimum Order Quantity	1 piece
Customs Tariff Number	85369001

Popular Downloads

Data Sheet, Technical Information	1SFC151007C02__
Instructions and Manuals	1SFC151011M0201

Dimensions

Product Net Width	0.065 m
Product Net Height	0.065 m

Product Net Depth / Length	0.08 m
Product Net Weight	0.124 kg

Technical

Ambient Air Temperature	Operation -25 ... +70 °C Storage -40 ... +85 °C
Color	Yellow/Light grey
Number of Auxiliary Contacts NC	2
Degree of Protection	Front IP66 Front IP67 Front IP69K Housing IP69K Housing IP66 Housing IP67 Terminals IP20
Enclosure Type NEMA	Type1 Type12 Type13 Type3R Type4 Type4X
Rated Operational Voltage	24 ... 300 V

Environmental

RoHS Status	Following EU Directive 2011/65/EU and Amendment 2015/863 July 22, 2019
RoHS Date	0626 5
RoHS Information	2CMT2019-005802
WEEE Category	Product Not in WEEE Scope

Certificates and Declarations (Document Number)

CCC Certificate	2003010305054693_
CQC Certificate	CQC2003010305054693
cURus Certificate	UL_E496500-20171020
Declaration of Conformity - CCC	2020980305001187
Declaration of Conformity - CE	2CMT2019-005802
DNV GL Certificate	9AKK107046A3749
EAC Certificate	EAC RU C-CN.ME77.B.00537/19
Environmental Information	1SFC151009D0201
Instructions and Manuals	1SFC151011M0201
RoHS Information	2CMT2019-005802

Container Information

Package Level 1 Units	bag 1 piece
Package Level 1 Width	0.1 m
Package Level 1 Depth / Length	0.1 m
Package Level 1 Height	0.078 m
Package Level 1 Gross Weight	0.154 kg

Package Level 1 EAN7320500358146

Classifications

Object Classification Code	S
ETIM 4	EC002024 - Accessories for control circuit devices
ETIM 5	EC000200 - Enclosure for control circuit devices
ETIM 6	EC000225 - Control circuit devices combination in enclosure
ETIM 7	EC000225 - Control circuit devices combination in enclosure
eClass	V11.0 : 27371216
UNSPSC	39121326
E-Number (Finland)	2312183
E-Number (Norway)	4373375
E-Number (Sweden)	3711619

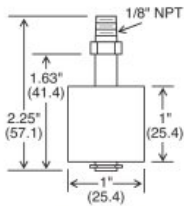
Categories

Low Voltage Products and Systems → Control Products → Pilot Devices → Compact Range

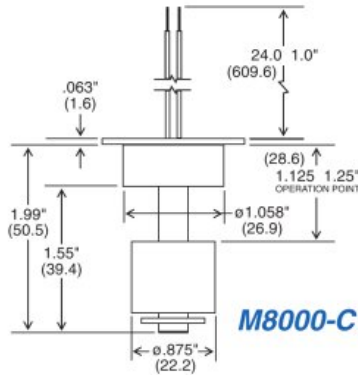


Specifications

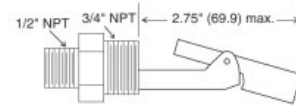
LL



M8000



M8000-C



M8700-C

HVAC Series	M8000	M8000-C	M8700-C
Material	Polypropylene	Polypropylene/PVC	Polypropylene
Maximum Pressure	100 PSIG	50 PSIG*	100 PSIG
Maximum Temperature	105°C (221°F)	60°C (140°F)	105°C (221°F)
Float Specific Gravity	0.80	0.85	0.60
Fitting	1/8" NPT	3/4" PVC Pipe	1/2" NPT or 3/4" NPT
Lead Wires	22 ga. MTW 24"	22 ga. MTW 24"	22 ga. MTW 24"
Nominal VA	30	30	30
Approvals	UL, CSA, CE, NSF	UL, CSA, CE	UL, CSA, CE, NSF

* With vent hole plugged

INSTALLATION NOTE: As with any condensate line, contamination from water content and debris could inhibit proper float operation. Occasional cleaning can be accomplished by wiping with a soft cloth. Flush line with bleach and a descaling solution if water conditions require such treatment.

All specifications are subject to change without notice.



Sensor solutions for today and the future™



Madison Company 800-466-5383 www.madisonco.com

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**ROCHESTER
GAUGES, INC.**

ISO 9001:2008 CERTIFIED

9800 Industrial Sender



Industrial Reed Switch Fuel Level Sender

Application

The Reed Switch line of fuel senders fit tanks 4" [101.6 mm] to 42" [1067 mm]. They are designed for top mounting in aluminum, plastic, steel or stainless steel fuel tanks in all types of industrial equipment. These senders are recommended for both on-road and off-road applications. They include special features and protection from corrosion (internal and external to the fuel tank) which makes them the quality standard for all industries.

General Information & Features

Standard mounting configuration, SAE 5 hole bolt pattern. The head and support are made of stainless steel and is suitable for harsh off-road conditions. The sender is suitable for gasoline, ethanol, diesel, bio-diesel, urea and water.

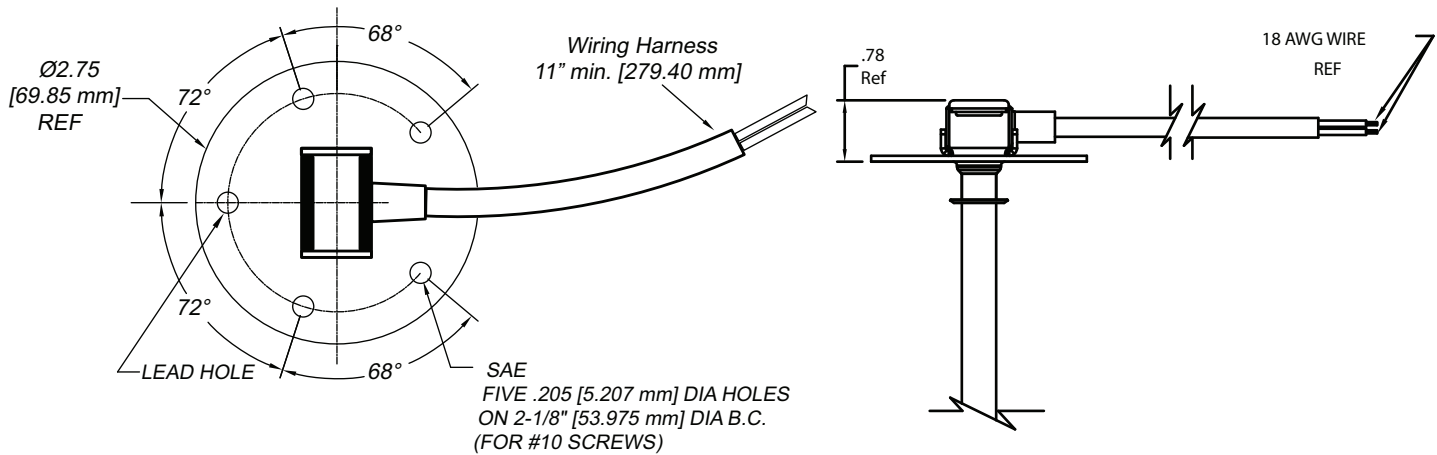
Industry standard output: 240-30 ohms. The close tolerances held on this series of Reed Switch fuel level sender will provide the proper signal for any of the popular 2" [50.8 mm] panel mounted quality receivers or ECM's.



* Materials and specifications are subject to change without notice.

See reverse side for dimensional data, materials of construction, performance, and advice on how to order.

The Measure of Excellence



General Specifications*

Mounting

Designed for top mounting only

Accuracy

System accuracy depends upon proper sender sizing. Resistance values are 30 ohms +/-2% at full and 240 ohms +/-2% at empty. System accuracy may depend upon tank shape. System accuracy may be less near full and empty. System accuracy may be less if tank is not level. System accuracy may be less depending upon indicator. This sender is not to be used for filling.

Temperature Range

-40°F to 176°F, -40°C to 85°C

Power

0.5 Watts maximum

Leak Test

Passes 16 PSIG [1,1 Bar] test

Gasoline Rocker Test

3,000,000 cycles

Thermal Shock/Hot Dunk Test

10 cycles in air, +85°C to immersion in Room Temperature Saline

Dry Bench Cycling

25,000,000 cycles

Vibration Test

6 hours each plane, 9.9 Grms, 24-2,000 Hz

Salt Spray Test

96 hours external as mounted

Drop Test

1.2m onto concrete from each orientation

Power Wash Test

50 cycles, 3,000 psi, 2.7 gal./min.

Lead Pull Test

20 lbs. harness, 10 lbs. each wire

Materials of Construction*

Head

Stainless steel

Support

Stainless steel

Float

Nitrile rubber

Material Compliance

RoHS Compliant

Wiring Harness

18 awg. wires

Black & white PVC insulation.

Black overmolded PVC jacket.

Optional mounting gasket: Nitrile or Viton - Please specify.

Note: For installation instructions see MS-514.

* Materials and specifications are subject to change without notice.

09/07/2017

Fuel Senders

These Fuel Senders are designed to be used in conjunction with our EG Series Switchgauge Instruments as well as CAN I/O modules. See the bulletin 95090 EG Series – Electric Gage and Switchgauge Instrument for more information.

Specifications

Tank Cutout Hole: Ø 1.750 in. (44 mm)

Materials:

Float: Foamed Buna N

Float Arm: Stainless Steel

Resistor Housing: Glass Filled Polyacetal

Flange & Shaft: Steel, Zinc-Plated

Gaskets: Buna N, 70 Durometer (48% Acrylonitrile)

Hardware: Brass & Phosphor Bronze

Mounting Hardware: Zinc-Plated Steel

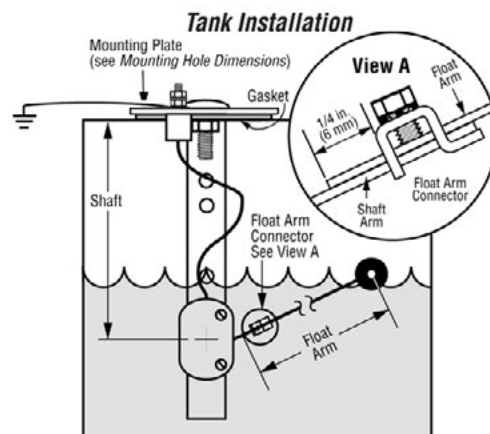
Resistance Range:

ESF and ES2F Model: 240 Ohms to 33 Ohms

ESDF Model: 120 ohms to 17 ohms

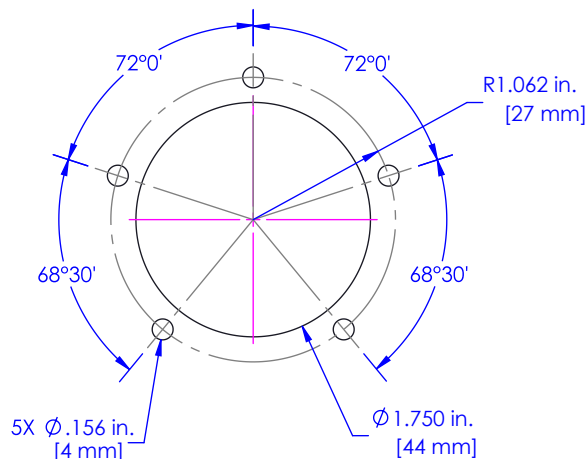
Operating Temperature: -40° to 185°F (-40° to 85°C)

Storage Temperature: -76° to 185°F (-60° to 85°C)



Dimensions

Mounting and Cutout Layout



Resistance Values

ESF, ES2F Senders:

E = 240 ohms (falling level) (primary calibration point)

1/4 = 153 ohms (falling level)

1/2 = around 100 ohms (falling level)

3/4 = 67 ohms (falling level)

F = 33 ohms (rising level) (secondary calibration point)

Resistance Table for ES2F Fuel Sender

Resistance tables for ES2F Fuel Sender (resistance verses % of scale) Murphy Fuel Sender (0% - 100%)

% of Scale	0	10	20	30	40	50	60	70	80	90	100
R(Ohm)	244	205	171	143	123	103	88	74	60	47	33

Application Note: We recommend using the Murphy Fuel Level Senders only in Diesel Fuel applications.

11 of 11

$$B = A + 1.03125$$

C - D 46875

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	9	7	9 9	
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Model 516 5-Gallon Spill Container

SPECIFICATION SHEET

Tank top spill containers are designed to contain small spills that occur at the fill point on aboveground storage tanks. The 516 has a hinged cover that is lockable with a padlock. EVR approved models available.

Certifications & Listings

- Florida DEP EQ 725
- California Air Resources Board Phase I AST EVR
- ULC listed



516 (4")

EVR

EVR

ID Number	B	C	D	E	F	G	H	I	J
516---0200 ACPW	F	2	No	Centered	12.03	17.2	13.2	17	Yes
516---0400 ACPW	F	4	No	Centered	13.41	17.2	13.2	21	Yes
516D--0200 ACPW	F	2	Yes	Centered	13.16	17.2	13.2	17	Yes
516D--0400 ACPW	F	4	Yes	Centered	13.41	17.2	13.2	21	Yes
516O--0200 ACPW	F	2	No	Offset	12.03	17.2	13.2	17	Yes
516O--0400 ACPW	F	4	No	Offset	13.41	17.2	13.2	21	Yes
516O--0400ACEVR	F	4	No	Offset	13.41	17.2	13.2	21	Yes
516OD-0200 ACPW	F	2	Yes	Offset	13.16	17.2	13.2	17	Yes
516OD-0400 ACPW	F	4	Yes	Offset	13.41	17.2	13.2	21	Yes
516M--0200 ACPW	M	2	No	Centered	12.28	17.2	13.2	16.5	Yes
516M--0400 ACPW	M	4	No	Centered	13.78	17.2	13.2	19	Yes
516MD-0200 ACPW	M	2	Yes	Centered	13.28	17.2	13.2	17.5	Yes
516MD-0400 ACPW	M	4	Yes	Centered	13.78	17.2	13.2	20.5	Yes
516MO-0200 ACPW	M	2	No	Offset	12.28	17.2	13.2	17	Yes
516MO-0400 ACPW	M	4	No	Offset	13.78	17.2	13.2	19	Yes
516MO-0400ACEVR	M	4	No	Offset	13.78	17.2	13.2	19	Yes
516MOD0200 ACPW	M	2	Yes	Offset	13.28	17.2	13.2	17.5	Yes
516MOD0400 ACPW	M	4	Yes	Offset	13.78	17.2	13.2	20.5	Yes

SPECIFICATION OPTIONS:

B—Mounting connection:

Male (M)

Female (F)

C—Size: NPT threads

D—Drain: Yes/No

E—Mount

F—Height (inches)

G—Width (inches)

H—Body diameter

I—Shipping weight (lbs.)

J—ULC listing

Body: Powdercoated white; black powdercoat optional

Lid: Powdercoated white; black powdercoat optional

Other hardware: Zinc plated steel

Optional with drain

Drain push rod: Brass

Drain nut: Brass

Spring: Bronze

O-Ring: Fluoroelastomer

570 E. 7th Street, P.O. Box 238 | Dubuque, IA 52004-0238

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www.morbros.com



MORRISON BROS. CO.

Clay & Bailey Mfg. Co.



A CENTURY'S WORTH OF INNOVATION

1228-03-2200 Overfill Prevention Valve

Clay & Bailey introduces the solution to the problems of:

- * Restricted height GenSet Tanks with storage capacity.
- * Installing an Overfill Prevention Valve into a 2" opening.
- * Preventing expensive overfilling of AST's.
- * Unreliable whistle/vent alarms

The #1228-03-2200 2" Overfill Prevention Valve has these outstanding design features:

- * Installs in a 2" opening
- * Accepts pressure delivery of product
- * Provides Genset tanks with large fuel storage capacity at shutoff height.
- * Provides positive shut off of fuel.
- * Retro-fits to an existing AST.
- * Mechanical in operation-no user interface required.
- * Compatible with fuels (Consult factory for your specific product)
- * Minimum 5 PSI operating pressure required.



Comes with adaptor not shown



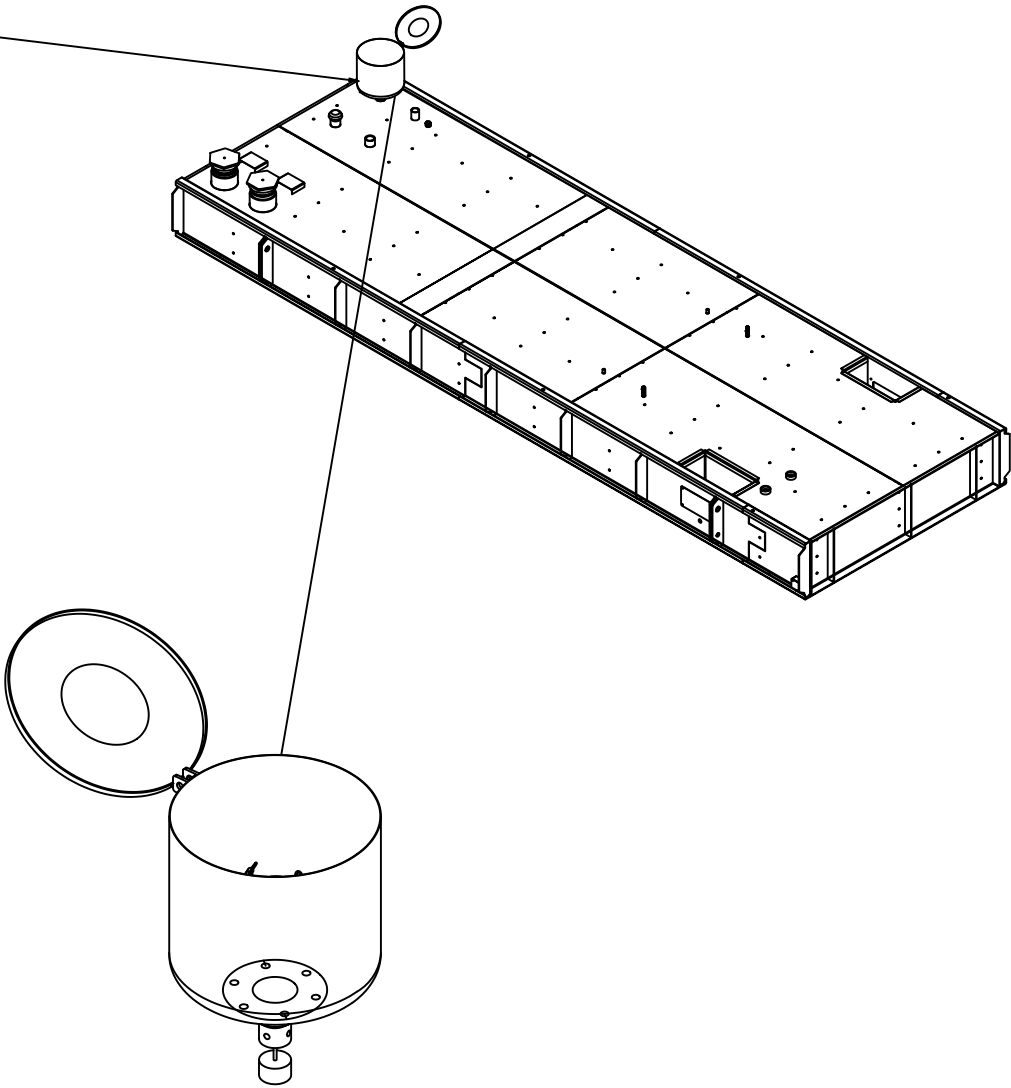
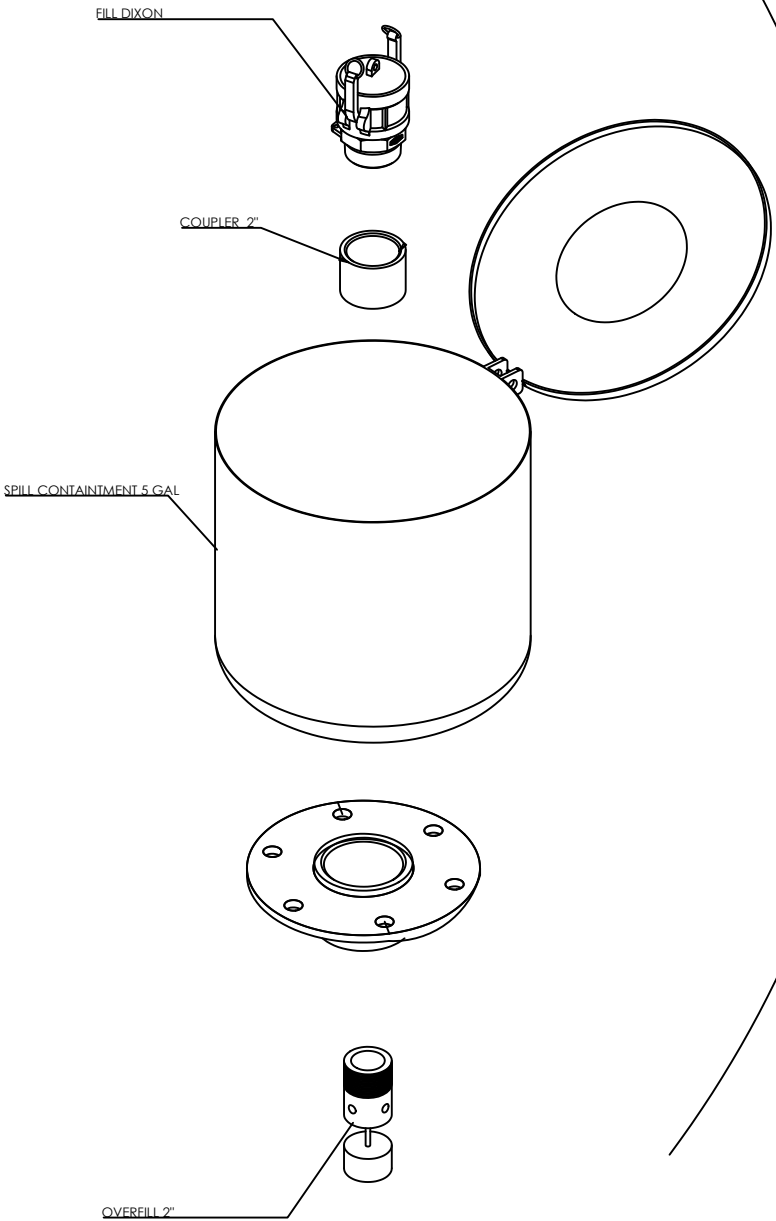
Patented #7584766



INSPECTION DIMENSION

DRAWING REVISION

NON SPECIFIED TOLERANCES			
PART TOLERANCE TABLE		GENERAL TOLERANCES	
INTERVAL	TOLERANCE	DIMETERS	ANGULAR
0" - 40"	± 0.04"	± 0.03"	± 2°
40" - 16.5'	± 0.08"		
16.5' - 40'	± 0.12"		
40' - 328'	± 0.4"		
MATERIAL	ITEM	WEIGHT (lb)	FINISH
NA	NA	--	CLEAN SURFACES FREE OF BURRS



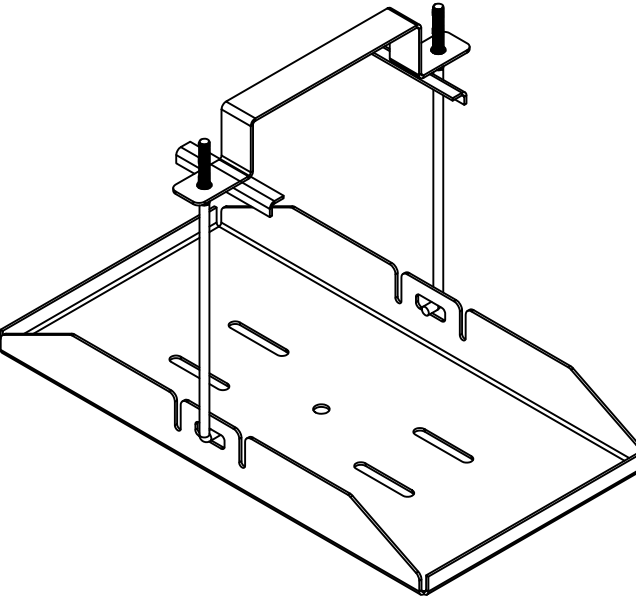
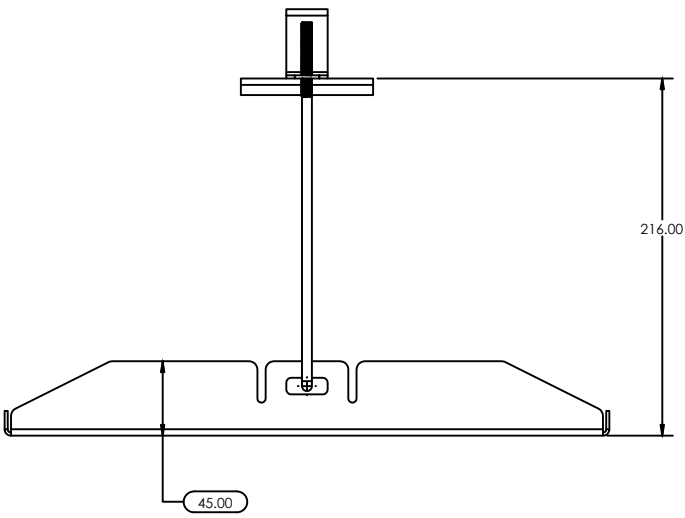
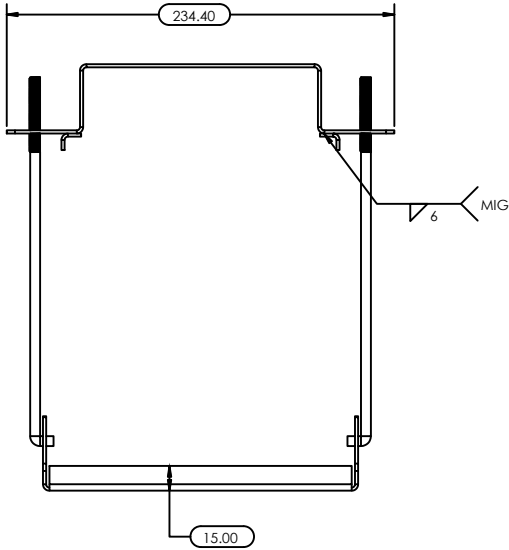
DEPT: ENGINEERING	DATE: 16-08-2021	DRAWING: JMRS	REVISED: RMMM	APPROVED: OLM
SCALE: -- ACDT: INCH	CUSTOMER: STD UL DIESEL	DRAWING No: 153749		
TITLE: ENS. OVERFILL PROTECTION AND SPILL CONTAINMEN 5 GAL				REV: 00
				SHEET 1 OF 1
IGSA S.A. DE C.V. OFFICE GENERAL RODE DE REFORM No. 2977, COL. CUAJIMALPA, CP 05000, CIUDAD DE MEXICO, MEX. PLANT: INDUSTRIAL ZONA INDUSTRIAL 104-5 ROAD, LERMA EDO. DE GUANAJUATO, CP 36740 ENGINEERING DEPARTMENT TEL: 01 (52) 56265359 Ext: 3018, 3020 & 3030.		THE INFORMATION CONTAINED HEREIN IS EXCLUSIVE PROPERTY OF IGSA S.A. DE C.V. THEREFORE IT CAN NOT BE USED, COPIED OR DUPLICATED WITHOUT THE WRITTEN CONSENT OF IGSA S.A. DE C.V.		

INSPECTION DIMENSION

No.

DRAWING REVISION

NON SPECIFIED TOLERANCES			
PART TOLERANCE TABLE		GENERAL TOLERANCES	
INTERVAL	TOLERANCE	DIMETERS	ANGULAR
0" - 40"	± 0.04"	± 0.03"	± 2°
40" - 16.5"	± 0.08"		
16.5" - 40"	± 0.12"	0.36" ± 0.002	
40" - 328"	± 0.14"		
MATERIAL		ITEM	WEIGHT (lb)
NA		NA	—
CLEAN SURFACES FREE OF BURRS			



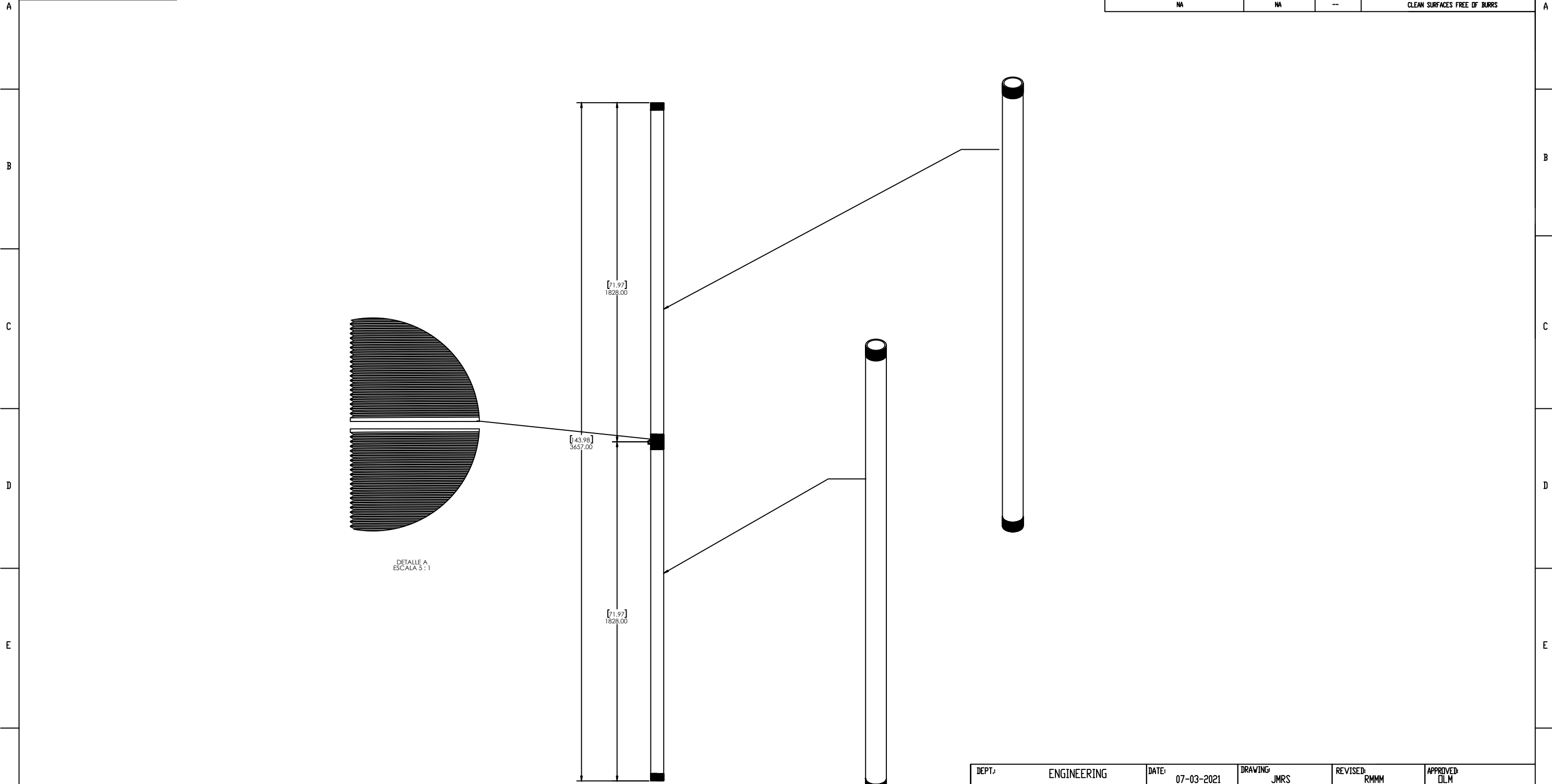
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SCALE: -- ACOT: INCH	CUSTOMER: STD UL DIESEL	DRAWING No: 153637		REV: 00
TITLE: BATTERY RESTRAINT 15				SHEET 1 OF 1
IGSA S.A. DE C.V. OFFICE GENERAL: RIDE OF RETURN No. 2977, COL. CAJUALPA, CP 05000, CIUDAD DE MEXICO, MEX. PLANT: ANDOLULCO-ECOTONAC 104-S ROAD, LERMA EDU. FROM MEXICO, CP 52740 ENGINEERING DEPARTMENT: TEL: 01 55 56265350 Ext: 3018,3020 & 3030.		THE INFORMATION CONTAINED HEREIN IS EXCLUSIVE PROPERTY IGSA S.A. DE C.V. THEREFORE IT CAN NOT BE USED, COPIED OR DUPLICATED WITHOUT THE WRITTEN CONSENT IGSA S.A. DE C.V.		

INSPECTION DIMENSION

No.

DRAWING REVISION

NON SPECIFIED TOLERANCES			
PART TOLERANCE TABLE		GENERAL TOLERANCES	
INTERVAL	TOLERANCE	DIMETERS	ANGULAR
0" - 4"	± 0.04"	0.003"	± 2°
4" - 16.5"	± 0.08"		
16.5" - 40"	± 0.12"	0.005"	
40" - 328"	± 0.4"		
MATERIAL		ITEM	WEIGHT (lb)
NA		NA	---
FINISH			
CLEAN SURFACES FREE OF BURRS			



DEPT:	ENGINEERING	DATE:	07-03-2021	DRAWING:	JMRS	REVISED:	RMM	APPROVED:	OLM
SCALE:	---	CUSTOMER:	STD UL DIESEL			DRAWING No:	153715		
ACOT:	INCH						REV:	00	
TITLE:							SHEET		
12 FEET VENT							1 OF 1		
IGSA S.A. DE C.V. OFFICE GENERAL: RUC DE RETURN No. 2977, COL. CUAJIMALPA, CP 05000, CIUDAD DE MEXICO, MEX. PLANTA INDUSTRIAL: CECOTACAC 101-S ROAD, LERMA ENL FROM MEXICO, CP 52740 ENGINEERING DEPARTMENT: TEL: 01 (55) 56265350 Ext: 3018,3020 & 3030.							THE INFORMATION CONTAINED HEREIN IS EXCLUSIVE PROPERTY OF IGSA S.A. DE C.V. THEREFORE IT CAN NOT BE USED, COPIED OR DUPLICATED WITHOUT THE WRITTEN CONSENT OF IGSA S.A. DE C.V.		

SIMBOLOGY CONTROL

INSPECTION DIMENSION

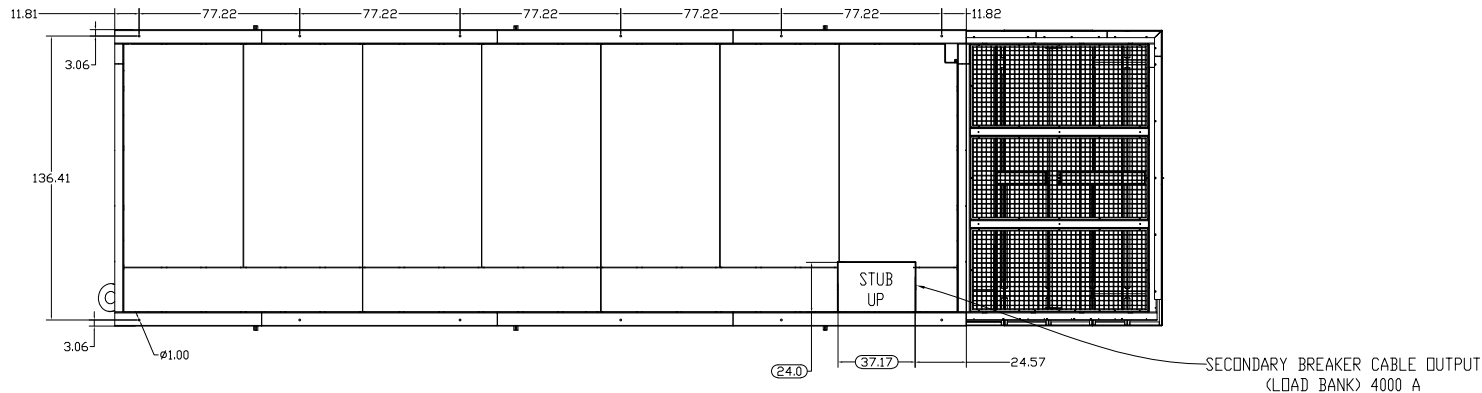
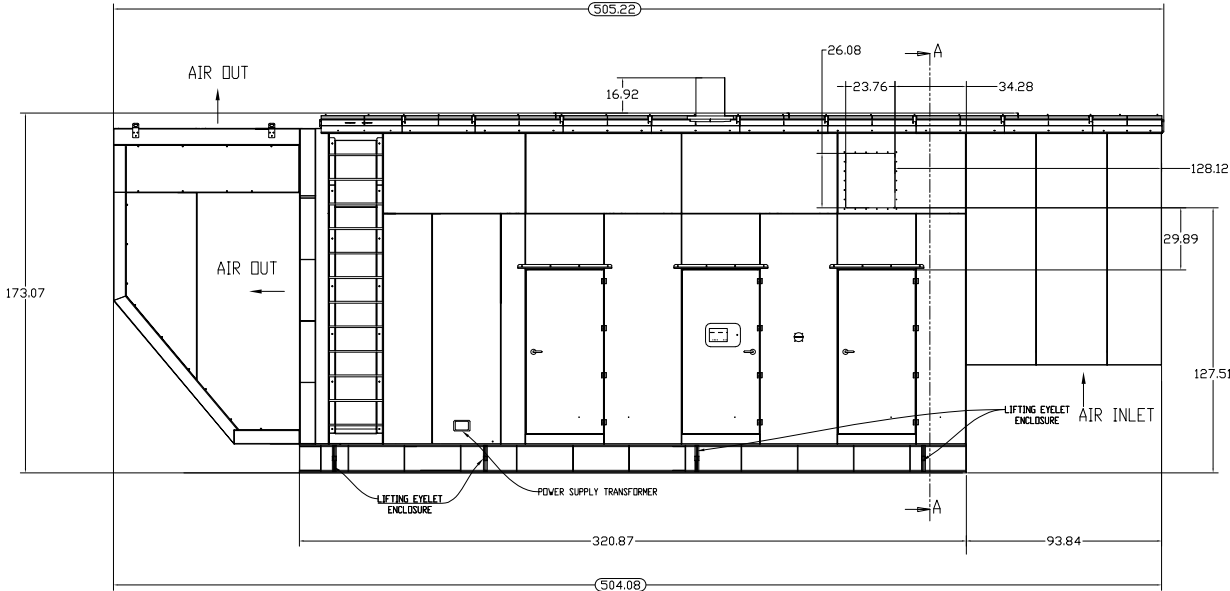
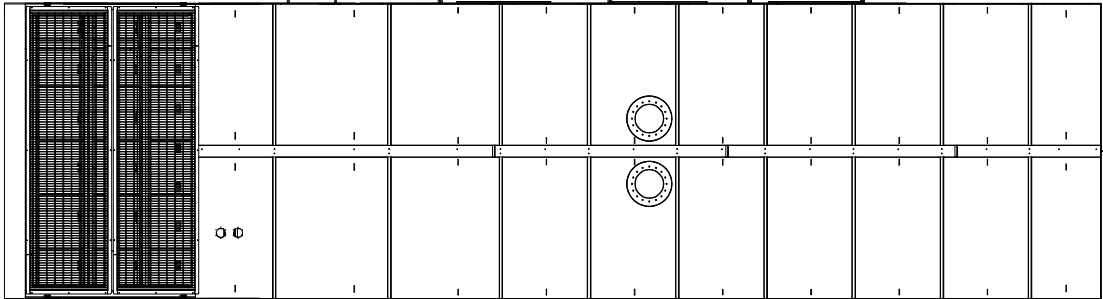
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DRAWING REVISION

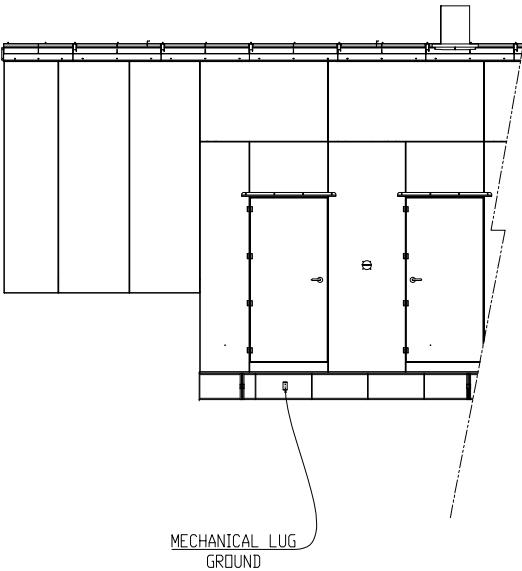
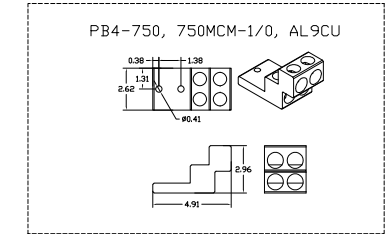
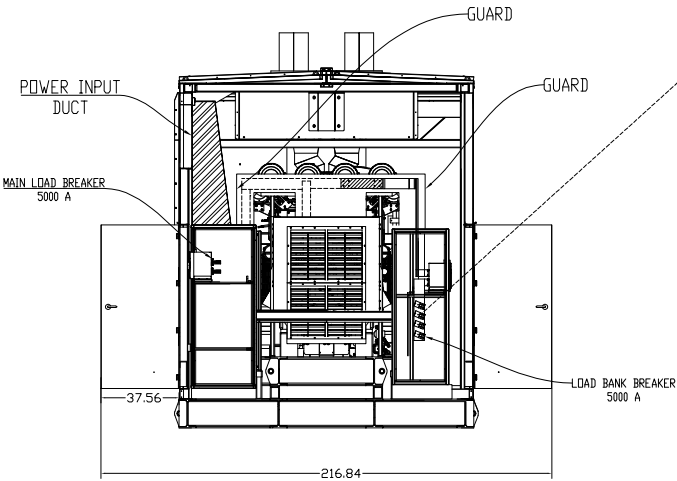
GENERAL NOTES:

- 180" DOOR OPENING WITH INTERNAL OPENING SYSTEM AND 90" OPENING LOCKING DEVIC
- INTERNALLY REINFORCED ENCLOSURE WITH 4 X 4" P.T.R. PROFILE STRUCTURE
- FUEL TANK UL 142 5000 GALL

NON SPECIFIED TOLERANCES			
PART TOLERANCES TABLE		GENERAL TOLERANCES	
INTERVAL	TOLERANCE	DIAMETERS	ANGULAR
0" - 40"	± 0.04"	±0.03"	± 2°
40" - 16.5"	± 0.05"		
16.5" - 40"	± 0.12"	0.36 ± 0.002	
40" - 328"	± 0.4"		
MATERIAL		ITEM	WEIGHT (lb)
ALUMINUM SHEET METAL 19 mm THICKNESS			CLEAN SURFACES FREE OF BURRS



BOTTOM VIEW MOUNTING HOLE PATTERN



PRELIMINARY DRAWING FOR APPROVAL.
26-09-2025

APPROXIMATE WEIGHT OF ENCLOSURE
110,900 LBS

DEPT.: ENGINEERING	DATE: 26/09/2025	DRAWING: MBG	REVISED: JLV	APPROVED: RMD
SCALE: SIN / ACOT: INCH	CUSTOMER: ALTASTREAM	DRAWING No: GENERAL DRAWING FOR 3300 KW		
TITLE: GENERAL DRAWING ENCLOSURE 3300 KW				REV: 00
				SHEET 1 OF 1
IGSA S.A. DE C.V. OFFICE GENERAL: RUDE OF REFORM No. 2977, COL. CUAJIMALPA, CP 05000, CDMX, MEX. PLANT: ANIMOLULCO-OCOTYACAC KM-5 ROAD, LERMA EDO. FROM MEXICO, CP 52740 ENGINEERING DEPARTMENT: TEL: 01 (55) 56265350 EXT: 3018, 3020 & 3030.		HE INFORMATION CONTAINED HEREIN IS EXCLUSIVE PROPERTY IGSA S.A. DE C.V. THEREFORE IT CAN NOT BE USED , COPIED OR DUPLICATED WITHOUT THE WRITTEN CONSENT IGSA S.A. DE C.V.		

REV.	DESCRIPTION	DATE	BY	APPROVED
------	-------------	------	----	----------

CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2345744-0
Report Reference AU6440-20231107
Date 10-Nov-2023

Issued to: IGSA S A DE C V
PROLONGACION PASEO DE LA REFORMA # 2977
COL CUAJIMALPA
MEXICO, Mexico 05000
Mexico

This is to certify that FTSR - Engine Generators
representative samples of See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 2200, 2nd Ed., Issue Date: 2012-06-01, Revision Date:
2015-07-29

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.


Deborah Jennings-Conner, VP Regulatory Services
UL LLC



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CERTIFICATE OF COMPLIANCE

Certificate Number UL-US-2345744-0
Report Reference AU6440-20231107
Date 10-Nov-2023

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

Model	Category Description
GSBD00700S, GSBD00700L, GSBD00700LT GSBD00700W	Engine Generators
GSBD00800S, GSBD00800L, GSBD00800LT GSBD00800W	Engine Generators
GSBD01000S, GSBD01000L, GSBD01000W	Engine Generators
GSBD01300S, GSBD01300L, GSBD01300W	Engine Generators
GSBD01500S, GSBD01500L, GSBD01500W	Engine Generators
GSBD01700S, GSBD01700L, GSBD01700W, GSBD01750S, GSBD01750L	Engine Generators
GSBD01800S, GSBD01800L	Engine Generators
GSBD02000S, GSBD02000L	Engine Generators
GSBD02300S, GSBD02300L	Engine Generators
GSBD02500S, GSBD02500L	Engine Generators
GSBD02640S, GSBD02640L	Engine Generators
GSBD02800S, GSBD02800L	Engine Generators
GSBD03000S, GSBD03000L	Engine Generators
GSBD03300S, GSBD03300L	Engine Generators
GSBD30600S, GSBD30600L, GSBD30600LT GSBD30600W	Engine Generators
GSBD30633S, GSBD30633L, GSBD30633LT GSBD30633W	Engine Generators
GSBD30644S, GSBD30644L, GSBD30644LT GSBD30644W	Engine Generators


Deborah Jennings-Conner, VP Regulatory Services
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CERTIFICATE OF COMPLIANCE

Certificate Number MH63698
Report Reference MH63698-20200103
Issue Date 2020-JANUARY-08

Issued to: IGSA S A DE C V
PROLONGACION PASEO DE LA REFORMA 2977
COL CUAJIMALPA
05000 MEXICO
DF MEXICO

This certificate confirms that SPECIAL-PURPOSE TANKS
representative samples of Secondary Containment Generator Base Tanks

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 142, STANDARD FOR STEEL ABOVEGROUND
TANKS FOR FLAMMABLE AND COMBUSTIBLE LIQUIDS.
UL 142A STANDARD FOR SPECIAL PURPOSE
ABOVEGROUND TANKS FOR SPECIFIC FLAMMABLE
OR COMBUSTIBLE LIQUIDS.
CAN/ULC S601, STANDARD FOR SHOP FABRICATED
STEEL ABOVEGROUND TANKS FOR FLAMMABLE AND
COMBUSTIBLE LIQUIDS.

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Bruce Mahrenholz, Director North American Certification Program
UL LLC

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