Technical specification

Stand-by Generator Sets

TECHNICAL INFORMATION

Standby Power (ESP)	**KVA** **KW**	**625** **500**
Prime Power (PRP)	**KVA** **KW**	**563** **450.4**
Mechanical structure		**Open skid on base frame**
Engine		**CUMMINS QSX15-G9**
Alternator		**STAMFORD HCI544D**
Control card		**DEEP SEA 7310**
Measures (L x W x H)	**mm**	**3500 x1350x 2100**
Empty weight	**kg**	**3785**
Fuel tank capacity (L)		**700 (External Fuel Tank)**

Voltage	Prime power(PRP) (KVA)	(KW)	Standby Power(ESP) (KVA)	(KW)
277/480	563	450.4	625	500
220/380				
254/440				
266/460				

Notes:

PRIME POWER: Electrical power data available at a variable load without limits of hours per year. An overload of 10% is allowed for 1 hour of every12.In accordance with ISO 8528/1 (2005)-PRP.

STANDBY POWER: Electrical power data at variable load in an emergency in accordance with standard ISO 8528/1(2005)–ESP. Overloads of emergency power are not allowed.

The standard reference conditions are: 25 ºC, 100 kPa and 30%relative humidity. Gasoil density: 0.85 g/cm^3. Gasoline density: 0.68g/cm.

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USP&E generators are available with CE certification along with the Installation Quality Assurance (IQA) from Cummins and designed in facilities certified to ISO 9001.

Our Genset's accept load as per NFPA 110

We reserve the right to modify any characteristic of their equipment without prior warning.
Photographs representing the product range, while able to include options. Weight and dimensions of a standard generator set.

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• GENERAL DESCRIPTION

Generator set for automatic operation due to a grid failure, including the electrical operations panel, installed on a bedplate. Start-up of the generator set will be carried out when a failure in the grid power supply is detected. Once the generator set has stabilized, a signal is sent to the switching panel to switch the grid position to generator set. When the grid power supply return is detected, a command is sent to the switching to switch to the generator set position of the grid. The generator set shuts-down after the applicable cooling period has elapsed.

• ENGINE

Cummins Diesel 4 stroke engine, rear cooling, with direct injection and engine regulation via ECM type electronic management and BELDEN connector wire for exporting data to the digital control panel.

Engine brand	**CUMMINS**	**Bore (mm)**	**137**
Model	**QSX15-G9**	**Stroke (mm)**	**169**
R.P.M	**1800**	**Compression ratio**	**17:1**
Net power (KWm)	**354**	**Type of regulation**	**CM 570**
Fuel	**Diesel**	**Europe exhaust emission**	**EUO**
No. of cylinders	**6**	**EPA exhaust emission**	**EPA2**
Engine Capacity (c.c.)	**15000**	**TA Luft exhaust emission**	**TA Luft 0**

Cooling System

Cooling of the sleeves using cooling fluid comprised of water and glycol at 50% in a closed circuit driven by the engine pump. Engine driven exhaust fan, radiator and expansion tank; original from the engine manufacturer.

The circuit is completed with the cooling purge system towards the outside of the bedplate and protections of all running surfaces

• **Cooling type**	**Water**
• **Coolant capacity (L)**	**50**
• **Design temperature radiator**	**50°C**

Generator Set Point

Engine :	**Water jacket heater 230v**	**Power Panel:**	**4 Poles Main Circuit Breaker**
Enclosure :	**Sound Attenuated Canopy**	**Warranty:**	**5 years for standby application** **2 years for prime application**
Alternator :	**Alternator Heater PMG kit**	**Silencer :**	**9 db attenuation industrial silencer** **25 db residential-delivered loose**

Lubrication System

Gear pumps lubrication system driven by the engine and with original engine manufacturer lubricant filtering system. It is completed by an outward purge circuit by means of a manual purge pump.

• **Oil capacity (L)**	**91**

Air Intake System

Air intake system for combustion with filtering device and filter change indicator; originals from the engine manufacturer. Intake air cooling after the turbo by means of an air/air exchanger.

• **Intake air flow (litre/s)**	**712**

Exhaust System

Optional exhaust silencers with -13 dB(A),-26 dB(A) or -35 dB(A) of attenuation, made in painted steel inside and out, highly resistant to corrosion and with a water drainage system

• **Ya gas emission (°C) 448**	• **Maximum exhaust back pressure (In Hg): 3**
• **Gas flow (m^3/min) 108.87**	

Start System

Start system that uses an electrical motor, battery, battery dis-connector and battery charge alternator that is driven by the engine itself. The start motor and the battery charge alternator are originals from the engine manufacturer.
Lead acid battery with Spiral cell recombining technology, sealed structure to prevent leaks, maintenance free, large start-up capacity maintaining the voltage due to its low internal resistance and small volume thanks to its rolled plate's design that guarantees it will withstand many discharges with large temperature changes.

• **Starter voltage system (V)**	**24**	**Battery type**	**2*12V 120Ah**

Fuel supply system

The fuel intake system has a high performance decanter filter that prevents particles greater than 30 microns from passing through them.

Includes level sensor with low fuel alarm signal that indicates the amount of fuel available in the tank to the electrical panel.

• **Fuel tank capacity (L)**	**700**

Fuel consumption panel (range according to the standard configuration)

OUTPUT POWER			FUEL CONSUMPTION			
%	KWm	hp	kg/ KWm·h	lb/ hp·h	litre/ hour	US gal/ hour
STANDBY POWER						
100	560	750	0.207	0.340	135.9	35.9
PRIME POWER						
100	507	680	0.198	0.325	117.8	31.1
75	380	510	0.202	0.333	90.5	23.9
50	254	340	0.219	0.360	65.3	17.2
25	127	170	0.251	0.413	37.4	9.9
CONTINUOUS POWER						
100	354	475	0.205	0.337	85.3	22.5

• ALTERNATOR

STAMFORD alternator with 4 poles, with a life time lasting greased bearing, H class insulation, without brushes, 2/3 coil pitch, IP23 and AVR (Automatic Voltage Regulator).
Protection of the windings in environments with up to 95% relative humidity and in indoor marine use.
Separately excited by PMG with overload capacity 3 times the nominal current for 10 s. Joining of engine and alternator is through a flexible disc coupling.

Regulations:

- IEC 60034
- NEMA MG 1.22
- ISO 8528:3
- CSA
- UL 1446

Low wave distortion:

- THC < 4%
- THD < 4%
- THF (IEC) < 2%
- TIF (NEMA)<50

Behavior during transients:

Voltage drop below 18% for acceptance of the nominal load with a power factor of 0.8
Recovery time lower than 0.5 s for 20% voltage drops.

Incorporates electromagnetic emissions suppressor in accordance with EN 55011, group 1, class B.

Brand:	**STAMFORD**	**IP Alternator:**	**IP 23**
Model:	**HCI544D**	**Excitation system:**	**Self excited**
Alternator power:	**519-588**	**Optional excitation system:**	**Separately excited by PMG**
Number of reconnectable wires:	**12**	**AVR model:**	**SX460-AS440-MX321-MX341**
Winding:	**311**	**Voltage stability:**	**±1%**

• BEDPLATE

The engine-alternator set is coupled to the bedplate by means of anti-vibration shock mounts that absorb almost all the vibrations.
The bedplate is made of a phosphate, passivity steel profile with polyester dust paint that guarantees a resistance of at least 500 hours in a saline fog chamber in accordance with standard ASM B-117-09.
The fuel tank is integrated and welded into the base frame, includes level sensor with low fuel alarm signal that indicates the amount of fuel available in the tank .

• ELECTRIC PANEL

Electrical panel integrated in the generator set with DEEP SEA digital control plate, quick switching of the grounding system (TT, TN or IT) and emergency shutdown pushbutton.
As an option, it may include a single-pole circuit breaker, manually actuated, with thermal-magnetic protection against overloads and short-circuits.
In addition, it has a Mitsubishi brand circuit breaker, manually actuated, with thermal-magnetic protection against overloads and Short-circuits.

• **Circuit Breaker rated current (A)**	**3P 800A**	**Battery charger**	**DSE 9255 - 24V SA**

Has a DEEP SEA battery charge maintainer, designed to be permanently connected to the battery and maintains it charged to its maximum capacity.
Has no moving part. The charger switches to floating mode when the charge is complete.

Dimensions And Weight

Length (mm)	**3500**	**Height (mm)**	**2100**
Width (mm)	**1350**	**Weight (Kg)**	**3785**

Electric Panel

DEEP SEA control plate, DSE 7310 with grid monitor that starts-up the generator set when it detects a failure in the electrical power supply from the grid and sends a signal to the switching panel to switch from the grid position to the group position. Once the power supply has been re-established, it sends an order to the switching panel to transfer the generator set power to the grid and shuts-down the generator set once it has cooled down. It also starts-up the generator set using an external signal.

Also, control plate DSE 7310 checks a large number of parameters of the generator set which allows it to display information, statuses and alarms. If required, it will shutdown the generator set: due to high coolant fluid temperature, low oil pressure, low coolant fluid level,etc.

Includes a 132*64 pixel LCD screen with lighting,5 navigation menu buttons, independent operational mode buttons, and alarms and status indicating LED's.

Communications via USB, RS232, RS485, as well as DSE net for system upgrade. Possibility of Ethernet connection (requires a separate module).MODBUS protocol available for client software. Completely configurable using a PC in Windows environment and free Scada type software in real time.

Includes reading and displaying of parameters with RMS values, real time clock, events history log up to 250 events and programming of alarms, events, start-ups and shutdowns.

Operating modes: START-UP,SHUTDOWN,AUTO,and MANUAL.

Generator

- Generator voltage (L-N)
- Generator voltage (L-L)
- Generator frequency
- Generator current
- kW
- kVA
- kWh
- kVA
- Power factor

Grid

- Grid voltage (L-N)
- Grid voltage (L-L)
- Grid frequency

Engine

- Turn speed
- Cooling fluid temperature
- Oil pressure
- Hour meter
- Battery voltage
- No. of start-ups
- Fuel level

Protections

- Start-up fault (generator set shutdown)
- High coolant temperature(alarm and generator set shutdown)
- Low oil pressure (alarm and generator set shutdown)
- Low fuel level (alarm)
- Low cooling fluid level (generator set shutdown)
- Overload (alarm and generator set shutdown)
- Battery voltage high (alarm)
- Battery voltage low (alarm)
- Battery charge alternator failure (alarm)
- Generator low frequency (alarm and shutdown)
- Generator high frequency (alarm and shutdown)
- Generator low voltage (alarm and shutdown)
- Generator high voltage (alarm and shutdown)
- External emergency shutdown (shutdown)
- Engine over speed (shutdown)

• ATS

Optional cabinet for switching between the grid and the generator set by means of a **Socomec** brand motorized switch with an integrated mechanical and electrical interlocking device, allows for the padlock locking function includes

- Manual /Automatic mode selector and emergency manual control.
- Safety switching for isolating the loads.
- High dynamic resistance against short-circuits.
- Position indicator with fully visualized cut-off. Stable positions not affected by changes in voltage and mechanical vibrations.
- External electrical control of the positions and test sequences
- High number of operations. IP54 protection. Connections: Lower/lower

• **ATS**	**3P 800A 277/480V**

Performance Class

Execution class in accordance with ISO 8528/5(2005) taking into account the behavior of the behavior of the generator set in a permanent mode of operation with different load levels, as well as in a temporary mode of operation due to shocks in the load.

• **Performance class**	**G3**

• REGULATION

The generator set has a CE Marking that includes the following directives:
Machinery Directive / Directive 98/37/EC
Low Voltage Directive / Directive 2006/95/EC
EMC Directive / Directive 2004/108/EC
Applicable international regulations:
ISO 8528
IEC 529
BS 60034