

60Hz/1800 r.p.m-P.F.0.8					Prime Power	Standby Power	Rated Current
Genset	Engine	Alternator	Voltage (V)	PH	kW/kVA	kW/kVA	Amps
FC113X-C	6BT5.9-G1	LSA46.2M3 UCI274G TPA274S6	240 (220-240)	1	90/113	100/125	491.3
		LSA44.3M6 UCI274C TPA274VS2	380/220	3	90/113	100/125	170.9
		LSA44.3M6 UCI274C TPA274VS1	416/240	3	90/113	100/125	156.1
		LSA44.3S5 LSAP 44C UCI274C TPA224VL7	440-460	3	90/113	100/125	147.6 (440V) 141.2 (460V)
		LSA44.3S4 LSAP 44C UCI274C TPA224VL7	480/277	3	90/113	100/125	135.3

**Ratings:** All three Phase generator sets are rated at 0.8 power factor. All single-phase generator sets are rated at 0.8 or 1.0 power factor. POWERGEN reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

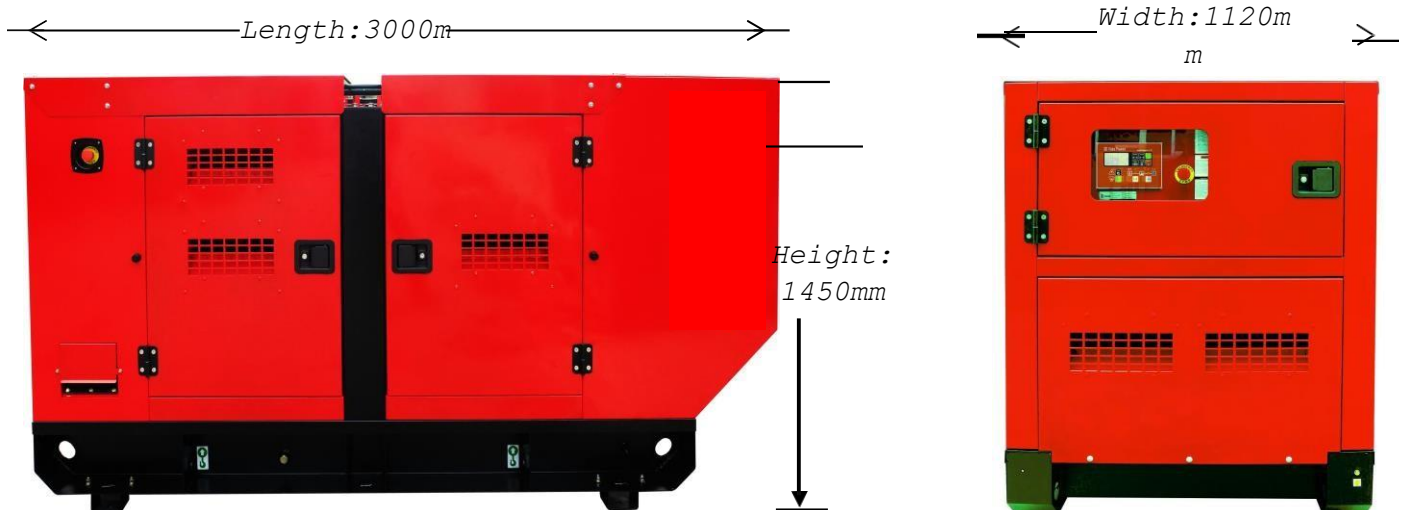
**Prime Power:**

Available continuously at variable load in lieu of commercially purchased power for an unlimited number of hours per year in accordance with ISO8528-1, and an overload of 10% permitted for one hour in every twelve hours of operation in accordance with ISO 3046-1.

**Standby Power:**

Emergency Standby Power in variable load applications in accordance with ISO8528-1 in the event of a utility power failure. No overload available for this service as relevant alternators are peak continuous rated at 27°C.

**Overall Dimensions (mm) & Weight (kg)**



**Weight (kg) : 1500**

## Standard and optional accessories

System	Standard ●	Optional ○
<b>Air Intake System</b>	<ul style="list-style-type: none"> <li>● Standard air filter</li> <li>● Air filter overload alarm</li> </ul>	<ul style="list-style-type: none"> <li>○ Air prefilter</li> <li>○ Heavy air filter</li> </ul>
<b>Cooling System</b>	<ul style="list-style-type: none"> <li>● 50°C radiator</li> <li>● Low water level alarm</li> <li>● Fan and belt guard</li> <li>● Discharge valve</li> </ul>	<ul style="list-style-type: none"> <li>○ Antifreeze</li> <li>○ Water jacket heater</li> </ul>
<b>Exhaust System</b>	<ul style="list-style-type: none"> <li>● Stainless steel bellow</li> <li>● Residential silencer</li> <li>● Complete exhaust pipe</li> <li>● Rain cap</li> </ul>	<ul style="list-style-type: none"> <li>○ Stainless steel silencer</li> <li>○ Stainless steel exhaust pipe</li> </ul>
<b>Fuel System</b>	<ul style="list-style-type: none"> <li>● 8 Hours integrated base fuel tank</li> <li>● Standard fuel filter</li> <li>● Fuel level gauge</li> <li>● Fuel filling cap</li> <li>● Fuel hose</li> </ul>	<ul style="list-style-type: none"> <li>○ 6 Hours double wall base fuel tank</li> <li>○ Fuel-water separator</li> <li>○ Oil level sensor ①②</li> <li>○ Automatic fuel top up system ①</li> </ul>
<b>Lubrication System</b>	<ul style="list-style-type: none"> <li>● Standard oil filter</li> <li>● Manual oil pump and drain</li> </ul>	<ul style="list-style-type: none"> <li>○ Oil heater</li> <li>○ Lube oil level indicator</li> <li>○ Oil temperature indicator ①</li> </ul>
<b>Alternator and Electric Switch</b>	<ul style="list-style-type: none"> <li>● Shunt or self excited</li> <li>● Class H insulation</li> <li>● H class temperature rise</li> <li>● DELIXI MCCB</li> <li>● Terminal connection lugs (L1, L2, L3, LN)</li> </ul>	<ul style="list-style-type: none"> <li>○ PMG or AREP (Leroy-somer only)</li> <li>○ Alternator space heaters</li> <li>○ PT100 winding temperature sensors</li> <li>○ Weaver AVR</li> <li>○ Weaver prolapse transformer</li> <li>○ F class temperature rise</li> <li>○ 4 Pole circuit breaker with leakage protection</li> <li>○ Circuit breaker - 4 pole</li> <li>○ ABB MCCB</li> <li>○ MCCB auxiliary contact and shunt tripping device</li> </ul>
<b>Control System</b>	<ul style="list-style-type: none"> <li>● Intelligent 1.0 for 4 cylinders engine</li> <li>● Intelligent 3.0 for 6 cylinders engine</li> <li>● Intelligent 5.0 for ECU engine</li> </ul>	<ul style="list-style-type: none"> <li>○ Panel lighting</li> </ul>
<b>Silent / Base</b>	<ul style="list-style-type: none"> <li>● 67-72 db(A) @ 3 meters</li> <li>● 4mm -6mm Steel base</li> <li>● Transportation support leg</li> <li>● Single hook</li> <li>● Power coating enclosure</li> <li>● Anti-vibration mounting between engine /alternator and baseframe</li> <li>● Emergency stop mounted outside the canopy</li> <li>● Standard color: Ral 3020</li> </ul>	<ul style="list-style-type: none"> <li>○ Forklift holes</li> <li>○ Enclosure color:</li> <li>○ Trailer for off road or on road</li> </ul>
<b>Start / Charge</b>	<ul style="list-style-type: none"> <li>● Battery with bracket and cables</li> <li>● Engine battery charger</li> <li>● 3A Mains charger</li> </ul>	<ul style="list-style-type: none"> <li>Low temperature starting batteries</li> <li>Battery switch</li> <li>High current charger (10A, 20A)</li> </ul>

### Remark:

- ① When you need the automatic oil top up system, you have to use the electrical oil level sensor.
- ② You can choose either electrical oil level sensor or oil temperature sensor.

# Engine

## Engine specifications

Manufacture	DCEC Cummins
Engine model	6BT5.9-G2
Engine type	4 cycle, in-line
Engine speed	1800 r.p.m
Prime power	100kW /133hp
Standby power	110kW /147hp
Governor type	Electronic
Governor make / model	BYC A
Aspiration:	Turbocharger
Displacement	5.9 L
Bore * Stroke	102mm x 120mm
NO. of cylinders	6
Compression ratio	17.3:1
Engine idle speed	750-850 rpm
Piston speed	7.2 m/s
Air cleaner type	Dry

## Exhaust System

Maximum back pressure	10 kPa
Exhaust pipe size normally acceptable	75 mm
Exhaust gas temperature	564-577 °C
Exhaust gas flow	312 Litres/sec.

## Air Intake System

Maximum intake air restriction with heavy duty air cleaner	
- Dirty element	6.2 kPa
- Clean element	3.7 kPa
Recommended intake piping size	76 mm
Intake air flow	111 Litres/sec.

## Lubrication System

Oil capacity (high - low)	14.2-12.3 Litre
Maximum oil temperature	121
Minimum required lube system capacity	
- Sump plus filters	16.4 Litres

## Fuel System

Type injection system	BYC A direct injection
Total drain flow (constant for all loads)	30 Litres/hou
Fuel consumption at 100% standby power	31.3 Litres/hou
Fuel consumption at 100% prime power	28.5 Litres/hou
Fuel consumption at 75% prime power	20.7 Litres/hou
Fuel consumption at 50% prime power	14.4 Litres/hou
Fuel consumption at 25% prime power	9.0 Litres/hou
Fuel tank capacity	8 hours

## Cooling System

Coolant capacity - engine only	7.9 Litre
Standard thermostat (modulating) range	82 - 96
Maximum top tank temperature	
- Standby power	104 °C
- Prime power	100 °C

## Electric System

Electrical system voltage	24V
Battery	Maintenance-free
Connecting cables	Available

## Thermal Data

Radiated heat to ambient	19-21 kW
Heat rejection to coolant	68-71 kW
Heat rejection to exhaust	TBD

## Alternator

### General Data

Power factor	Cos φ = 0.8
Excitation	Shunt / Brushless

60Hz/1800R.P.M

Insulation class	H
Bearing	Single
Altitude	≤1000 m

## Ratings

Prime Power Standby Power

Brand	Alternator	Number of wires	AVR Model	PH	Voltage (V)	kW /kVA	kW /kVA
Leroy-somer	LSA46.2M3	12	R250		240	102/128	113/141
Stamford	UCI274G	12	AS440	1	(220-240)	98.7/123.4	N/A
Tide	TPA274S6	12	SX460			92/115	100/125
Leroy-somer	LSA44.3M6	12	R250		380/220	99/124	109/136
Stamford	UCI274C	12	AS440	3		96/120	105.6/132
Tide	TPA274VS2	12	SX460			100/125	110/137.5
Leroy-somer	LSA44.3M6	12	R250		416/240	108/135	119/149
Stamford	UCI274C	12	AS440	3		90/112.5	96/120
Tide	TPA274VS1	12	SX460			90/113	97/121
Leroy-somer	LSA44.3S5	12	R220		440-460	92/115	101/126
Leroy-somer	LSAP 44C	6	R201	3		88/110	93/116.5
Stamford	UCI274C	12	AS440			94/117.5	102/127.5
Tide	TPA224VL7	12	SX460			89/111	95/119
Leroy-somer	LSA44.3S4	12	R220		480/277	90/113	99/124
Leroy-somer	LSAP 44C	6	R201	3		90/113	96/120
Stamford	UCI274C	12	AS440			100/125	110/137.5
Tide	TPA224VL7	12	SX460			94/117.5	101/126

## ControlSystem



Viewable parameters	Phase voltage	3	3	3
	Wire voltage	3	3	3
	Current	Instrument	3	3
	Frequency	●	●	●
	Active power	×	●	●
	Reactive power	×	●	●
	Apparent power	×	●	●
	Power factor	×	●	●
	Electric energy metering	×	×	●
Generator protection	Abnormal voltage	●	●	●
	Over-current warning	×	●	●
	Over current protection	×	●	●
	Over Frequency protection	●	●	●
	Short circuit protection	MCCB	MCCB+ ○	MCCB+ ○
Engine figure <b>Remark:</b> ● Standard	Oil pressure	●	●	●
	Water temperature	●	●	●
	Fuel level	○	○	○
	Speed ○ Optional	×NA	●	●
	Battery voltage	●	●	●
	Elapsed time	●	●	●
Engine protection	Low oil pressure warning	●	●	●
	Low oil pressure protection	●	●	●
	High temperature warning	●	●	●
	High temperature protection	●	●	●
	Overspeed warning	●	●	●
	Overspeed protection	●	●	●
	Charge fault	●	●	●
Function	Remote start-stop	●	●	●
	AMF	●	●	●
	Programmable input	3	7	7
	Programmable output	6	7	7
	Port extension	USB	○	○
	Remote monitoring	×	○	○
	Communication port	×	○	○
	CAN	●	○	●
	Start/Stop time control	×	×	●
	Maintenance tips	×	×	●
	Fault record	×	×	●
	Multi-language function	×	●	●

## Automatic Transfer Switch

A.T.S - 4 Poles

### (Safety Installation: Detect - Control – Switch System)

POWERGEN offers not only a changeover switch but also an integrated mains detection and switch system for your 24 Hour Power Protection. The system enables automatic start-up and operation of the generating set in the event of a mains power failure, overvoltage or loss of phase; and also mains automatic re-transfer once it come back. The system has a wide application such as hospital, bank, telecom, air port, broadcasting station and hotels.

#### System Advantages

- Automatically transfer and re-transfer load from main power to gen-power without operator intervention.operation. (Both automatic and manual)
- ATS Controller (AMF function), seamless integration with Intelligent 5.0
- Available from 32 – 3200A, better protection for 4 pole switch.
- Available in standard, bypass isolation and service-entrance configurations.
- Configurable in open, closed and programmed transition operating modes.
- Designed to interface seamlessly with POWERGEN generators and switchgear.
- Drip Proof IP23 Enclosure.
- Easy Installation: W all-mounted & Floor standing
- Comes fully loaded with the technology to do the job.



Rated Current	Breaker Type			
	A	Chinese	ABB	Socomec
32	x		B	x
63	A		B	B
80	x		x	B
100	A		B	B
125	x		B	B
160	B		B	B
200	x		B	x
250	C		B	B
300	x		x	x
315	x		C	x
400	C		C	C
630	C		D	D
800	D		D	D
1000	D		D	D
1250	D		D	D
1600	D		D	E
2000	E		E	E
2500	E		E	E
3200	E		x	E

#### Dimensions : mm

A : 400x200x500  
C : 600x400x1200  
E : 1000x800x1600

B : 500x300x650  
D : 800x600x1400



## **Controller**

### **StandardParameters**

- Gen phase voltage
- Generator frequency
- Engine speed
- Battery voltage
- Engine running hours counter
- Engine temperature
- Oil pressure



### **WarningandShutdownAlarms**

- Low oil pressure
- High engine temperature
- Over speed
- Under speed
- Start failure
- Stop failure
- Emergency stop
- High/low battery voltage
- Aux. shutdown alarm
- Aux. Warning