

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
FC45X-C	4BT3.9-G2	LSA42.3L9 UCI224E TPA224M3	240 (220-240)	1	36/45	40/50	187.5
		LSA42.3M7 PI144J TPA224S1	380/220	3	36/45	40/50	68.4
		LSA42.3S5 PI144J TPA184L10	416/240	3	36/45	40/50	62.5
		LSA42.3S5 LSAP 43C PI144J TPA184L10	440-460	3	36/45	40/50	59.0 (440V) 56.5 (460V)
		LSA42.3S5 LSAP 43C PI144J TPA184L10	480/277	3	36/45	40/50	54.1

**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.

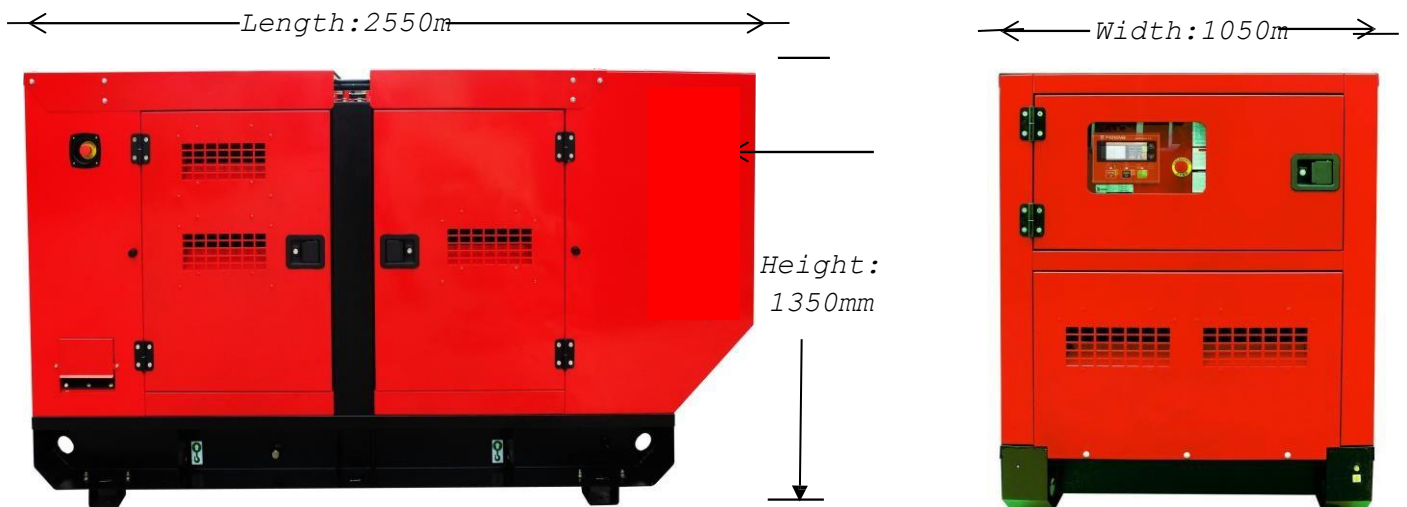
**Prime Power:**

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) : 1260**

## 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> </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>● Discharge valve</li> <li>● Stainless steel bellow</li> <li>● Residential silencer</li> <li>● Complete exhaust pipe</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>● Rain cap</li> <li>● 8 Hours integrated base fuel tank</li> <li>● Standard fuel filter</li> <li>● Fuel level gauge</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 ① ②</li> <li>○ Automatic fuel top up system ①</li> </ul>
<b>Lubrication System</b>	<ul style="list-style-type: none"> <li>● Fuel filling cap</li> <li>● Fuel hose</li> <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> </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>○ Oil temperature indicator ①</li> <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               <ul style="list-style-type: none"> <li>○ F class temperature rise</li> </ul> </li> <li>○ 4 Pole circuit breaker with leakage protection</li> <li>○ Circuit breaker - 4 pole               <ul style="list-style-type: none"> <li>○ ABB MCCB</li> </ul> </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> </ul>	<ul style="list-style-type: none"> <li>○ Panel lighting</li> </ul>
<b>Silent / Base</b>	<ul style="list-style-type: none"> <li>● Intelligent 5.0 for ECU engine</li> <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</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>● canopy</li> <li>● Standard color: Ral 3020</li> <li>● Battery with bracket and cables</li> <li>● Engine battery 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:**

- 3A Mains charger

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 senso

# Engine

## Engine specifications

Manufacture	DCEC Cummins
Engine model	<b>4BT3.9-G2</b>
Engine type	4 cycle, in-line
Engine speed	1800 r.p.m
Prime power	40kW/54hp
Standby power	44kW/59hp
Governor type	Electronic
Governor make / model	BYC A
Aspiration:	Turbocharger
Displacement	3.9 L
Bore * Stroke	102mm x 120mm
NO. of cylinders	4
Compression ratio	18.0:1
Engine idle speed	950-1050 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	350-373 °C
Exhaust gas flow	101 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	53.1 Litres/sec.

## Lubrication System

Oil capacity (high - low)	9.5 - 8.5 Litre
Maximum oil temperature	121°C
Minimum required lube system capacity	
- Sump plus filters	10.9 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	11.7 Litres/hou
Fuel consumption at 100% prime power	10.7 Litres/hou
Fuel consumption at 75% prime power	8.4 Litres/hou
Fuel consumption at 50% prime power	6.2 Litres/hou
Fuel consumption at 25% prime power	4.2 Litres/hou
Fuel tank capacity	8-12 hours

## Cooling System

Coolant capacity - engine only	7.2 Litre
Standard thermostat (modulating) range	83 - 95°C
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	To be decided
Heat rejection to coolant	32-35 kW Heat rejection to exhaust
exhaust	To be decided

## Alternator

**60Hz/1800R.P.M**

### General Data

Power factor	Cos φ = 0.8
Excitation	Shunt / Brushless

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	LSA42.3L9	12	R220			36/45	39.6/49.5
Stamford	UCI224E	12	AS440	1	240	36/45	N/A
Tide	TPA224M3	12	SX460		(220-240)	35.2/44	39.6/49.5
Leroy-somer	LSA42.3M7	12	R220			36.8/46	40.5/50.6
Stamford	PI144J	12	AS480	3	380/220	38/47.5	41.4/51.8
Tide	TPA224S1	12	SX460			38/47.5	42/52.5
Leroy-somer	<b>LSA42.3S5</b>	12	R220			36.8/46	40.5/50.6
Stamford	<b>PI144J</b>	12	AS480	3	416/240	35.2/44	39.6/49.5
Tide	TPA184L10	12	SX460			35/44	38/47.5
Leroy-somer	LSA42.3S5	12	R220			39.2/49	43.1/53.9
Leroy-somer	LSAP 43C	6	R201			37/46.6	41/51
Stamford	PI144J	12	AS480	3	440-460	37.6/47	42.3/52.9
Tide	TPA184L10	12	SX460			37.5/47	40/50
Leroy-somer	<b>LSA42.3S5</b>	12	R220			40/50	44/55
Leroy-somer	LSAP 43C	6	R201	3	480/277	40/50	47/59
Stamford	PI144J	12	AS480			40/50	45/56.3
Tide	TPA184L10	12	SX460			37.5/47	40/5


 Intelligent  
1.0

 Intelligent  
3.0

 Intelligent  
5.0

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	Oil pressure	●	●	●
	Water temperature	●	●	●
	Fuel level	○	○	○
	Speed	●	●	●
	Battery voltage	●	●	●
	Elapsed time	●	●	● Low
Engine protection	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	×	●	●
<b>Remark:</b>	● Standard	○ Optional	× NA	

## (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 TIDE POWER generators and switchgear.
- Drip Proof IP23 Enclosure.
- Easy Installation: Wall-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

B : 500x300x650

C : 600x400x1200

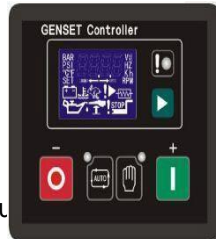
D : 800x600x1400

E : 1000x800x1600

## **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