

Engine Cummins 6ZTAA13-G4	Alternator Leroy-Somer LSA47.2VS2	<b>Generator Model</b> <b>FB450X-C1/ Open    FC450X-C1 / Silent</b>
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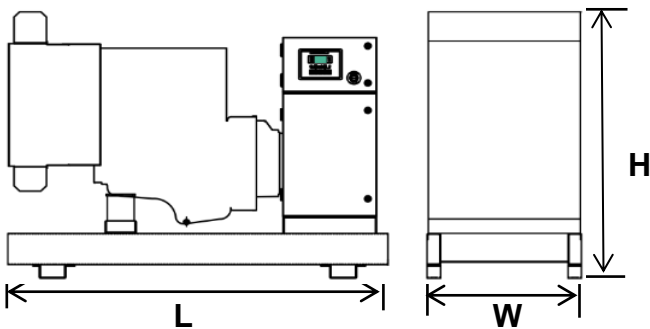
<b>60Hz/1800R.P.M</b>	<b>3-Phase</b>	<b>Power Factor Factor Cos <math>\Phi = 0.8</math></b>	<b>Emissions N/A</b>
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RATINGS	Prime Power		Standby Power		Rated Current	Fuel Consumption @100% Load
	(PRP)		(ESP)		Amps	
Voltage (V)	kWe	kVA	kWe	kVA	(A)	L/h
380/220	360	450	390	488	683,7	98,1
<b>440/254</b>	<b>360</b>	<b>450</b>	390	488	<b>590,5</b>	<b>98,1</b>
220/127	360	450	390	488	1181,0	98,1
230/132	360	450	390	488	1129,6	98,1



### Key Features:

- High efficient water cooled diesel engine.
- Single bearing with brushless alternators (Class H, with AVR).
- Radiator with pressure cap and drain point.
- Fully guarded engine-driven fan.
- Fully welded steel skid base with lifting holes and fork lift legs.
- Integral fuel tank with filler cap and gauge ( $\leq 650\text{kVA}$ ).
- Heavy duty rubber anti-vibration mountings.
- 12V or 24V maintenance free starter battery and connecting cables.
- Separate engine-driven battery charging alternator.
- Spin on oil and fuel filters and dry type air filter element.
- Industrial silencer (15dBA reduction) supplied loose.
- Auto start control system with LCD show.
- Battery charger provided.
- Main line 3P circuit breaker.
- Rigorous factory test wiring with IEC standard.
- Operation & Maintenance manual & Wiring diagrams.
- Wide range of optional extra features available.



### Overall Dimensions & Weights - Open Set

Length (L)-mm:	3150
Width (W)-mm:	1300
Height (H)-mm:	2100
Dry Weight-kg:	3850

**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.

**Prime Power:** Available continuously at variable load in lieu of commercially purchased power for an unlimited number of hours per year 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.

TIDE Power reserves the right to change the design or specifications without notice and without any obligation or liability.

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Engine		Cummins 6ZTAA13-G4	
	Units	Prime	Standby
Frequency	Hz	60	
Engine Speed	r/min	1800	
Cylinders / Type		6 cyl / In-line / 4-stroke	

General Performance	Aspiration		Turbocharged and Charged Air Cooled	
	Governor Type		Electronic Governor	
	Bore / Stroke	mm	130/163	
	Displacement	Litres	13	
	Compression Ratio		17.0:1	
	Piston Speed	m/s	8,15	
	Brake Mean Effective Pressure	kPa	2051	2158
	Engine Power	kWm	400	415
Fuel System	Fuel Consumption at 110% Prime Power	Litres/hour	103,3	
	Fuel Consumption at 100% Prime Power	Litres/hour	98,1	
	Fuel Consumption at 75% Prime Power	Litres/hour	70,4	
	Fuel Consumption at 50% Prime Power	Litres/hour	46,4	
	Fuel Consumption at 25% Prime Power	Litres/hour	26,3	
	Standard Fuel Tank Capacity	Hours / Litres	8 / 780	
Air System	Maximum Intake Air Restriction with Heavy Duty Air Cleaner			
	- With Clean Filter Element	kPa	3,2	
	- With Dirty Filter Element	kPa	6,2	
	Intake Air Flow	m <sup>3</sup> /min	32,7	33,1
Exhaust System	Maximum Back Pressure	kPa	13	
	Exhaust Outlet Size	mm	130	
	Exhaust Gas Flow	kg/min	34,1	34,5
	Exhaust Gas Temperature	°C	614	646
Oil System	Total Oil System Capacity	Litres	45,42	
	Typical Oil Pressure Range - Warm Engine	kPa	207-276	
	Maximum Lube Oil Flow to All Accessories	Litres/min	7,57	
	Maximum Oil Temperature	°C	121	
Cooling System	Coolant Capacity - Engine Only	Litres	23,1	
	Standard Thermostat (Modulating) Range	°C	82-94	
	Maximum Coolant Temperature - Engine Out	°C	102	
Electric System	Electrical System Voltage	V	24	
	Battery		Maintenance-free	
	Connecting Cables		Available	
Energy Balance	Heat Rejection to Ambient	kW	65	67
	Heat Rejection to Jacket Coolant	kW	162	167
	Heat Rejection to Exhaust	kW	346	359





## Alternator

60Hz/1800R.P.M

	Units	
General Data	Manufacture / Brand	Leroy-Somer
	Model	LSA47.2VS2
	Coupling / No. of Bearings	Direct / Single Bearing
	Phase / Poles	3-Phase / 4-Pole
	Power Factor	Cos Φ = 0.8
	AVR Regulation	Yes
	Voltage Regulation	± 0,5 %
	Insulation Class	H
	Drip Proof	IP23
	Excitation	Shunt
	Altitude	≤ 1000
	Overspeed	2250

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## Tide Power Easycon Function Summary

Controller Model / ComAp	EC 2.0 / Nano Plus	EC 3.0 / AMF20	EC 4.0 / AMF25	EC 5.0 / IG-NT
Controller Photos				
Standard Supply	×	●	○	○
Viewable Parameters				

Phase Voltage	×	3	3	3
Current	Instrumentation	●	●	●
Frequency	●	●	●	●
Active Power	×	●	●	●
Reactive Power	×	●	●	●
Apparent Power	×	●	●	●
Power Factor	×	●	●	●
Electric Energy Metering	×	●	●	●
<b>Generator Protection</b>				
Abnormal Voltage	●	●	●	●
Over-current Warning	×	●	●	●
Over current Protection	●	●	●	●
Over Frequency Protection	●	●	●	●
Short Circuit Protection	MCCB / ●	MCCB / ●	MCCB / ●	MCCB / ●
<b>Engine Figure</b>				
Oil Pressure	●	●	●	●
Water Temperature	●	●	●	●
Fuel Meter / Fuel Sensor	●/○	●/○	●/○	●/○
Speed	●	●	●	●
Battery Voltage	●	●	●	●
Elapsed Time	●	●	●	●
<b>Engine Protection</b>				
Low Oil Pressure Warning	×	●	●	●
Low Oil Pressure Protection	●	●	●	●
High Temperature Warning	×	●	●	●
High Temperature Protection	●	●	●	●
Overspeed Warning	×	●	●	●
Overspeed Protection	×	●	●	●
Alternator Charger	●	●	●	●
<b>Functions</b>				
Remote Start	●	●	●	●
AMF (Auto Main Failure)	●	●	●	●
Programmable Input	●	●	●	●
Programmable Output	●	●	●	●
Expand Module	×	○	○	○
Communication Function	×	○	○	●/ RS232 / 485
Communication Port	USB	○	○	RS232 / 485
CAN	●	×	●	●
Service Indicate	×	×	●	●
Fault History	●	●	●	●
Gen-Gen Synchronising	×	×	×	●
Gen-Mains Synchronising	×	×	×	●

**Remark:** ● Standard Supply      ○ Available as Optional      × Not Available

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## Enclosure / Canopy (Sound-attenuated & Weather Protective)

**“Ensure a quieter life with our sound attenuation system.”**

**Features:**

### **Extremely Rugged & Highly Corrosion Resistant Construction**

- Body made from 2.0mm sheet steel components with powder coating
- 8-12 hours built-in fuel tank integrated into the skid-mount base
- Excellent design and craftsmanship
- Compact structure and longer service life
- Residential silencer to make sure the sound level.
- Zinc alloy with black powder coated locks and hinges and proven to withstand corrosive conditions.



## Easy Commissioning and Maintenance

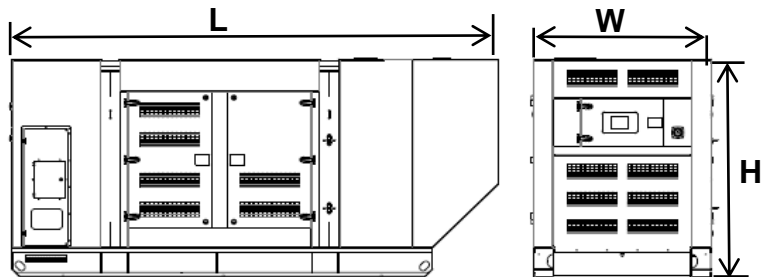
- Separate & Standing control room at end side, easy reachable electrical power connections, board.
- Side doors allowing 180° opening rotation .
- Radiator fill access through cover in canopy roof.
- Lube oil drain and radiator drain.
- Manual lube oil pump provided.

## Security and Safety

- Earth leakage protection.
- 40-50mm non-inflammable sponge inside.
- Control panel viewing window in a lockable access door.
- Emergency stop button mounted on canopy exterior.
- Fuel fill and battery can only be reached via lockable access doors.
- Exhaust silencing system enclosed for operator safety
- Efficient management of cooling air to avoid high water temperature, reliable operation under harshest conditions.

## Transportability

- Lifting points on top to move genset easily.
- Fork lift legs provided and easy to loose to fix the genset.



Overall Dimensions & Weight & Noice				
Dimensions	Weight	Noice Level	Base Tank @100% Load	
( L x W x H ) mm	kg	dB(A) at 7m	Hours	Litres
4700x1600x2250	5600	≤80	8	780

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## Automatic Transfer Switch

## A.T.S - 4 Poles

Tide Power 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 a mains automatic re-transfer once it come back.

## 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 AMF25
- Available from 32 – 4000A, 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 IP42 enclosure.
- Easy installation: wall-mounted & floor standing
- Comes fully loaded with the technology to do the job.



**50/60 Hz, 32-4000 Amps**

Rated Current	Amps	32	63	80	100	125	160	200	250	300	315	400	630	800	1000	1250	1600	2000	2500	3200	4000A
Breaker Type	Chinese	x	A	x	A	x	B	x	C	x	x	C	C	D	D	D	D	E	E	E	x
	ABB	B	B	x	B	B	B	B	B	x	C	C	D	D	D	D	D	E	E	x	x
	Socomec	x	B	B	B	B	B	x	B	x	x	C	D	D	D	D	E	E	E	E	E

**Dimensions : mm**

A: 400x200x500

B: 500x300x650

C: 600x400x1200

D: 800x600x1400

E: 1000x800x1600

**Optionals (All depends)****Genset:****Materials & Miscellaneous**

- ✓ Marine class painting and other special painting
- ✓ Standard acoustic enclosure genset
- ✓ Extended warranty
- ✓ Extended factory test
- ✓ Additional sensors
- ✓ Off road trailer type
- ✓ Standard ATS
- ✓ Mounted fire extinguisher
- ✓ Additional vibration isolation
- ✓ Wooden case packaging
- ✓ Tide Power tool kit
- ✓ Additional operation manual
- ✓ Nylon canvas wrapped packaging
  - Iron shelf for double stack shipping
- ✓ Water jacket heater
  - Additional CE features selection.

**Custom-Made solutions****Genset:****Materials & Miscellaneous**

- On road trailer (EU) type
- ✓ Rental type genset
- ✓ Mining type genset
- ✓ Marine type genset
- ✓ High temp. Radiator for silent type genset
- ✓ EPA series gensets

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**Optionals (All depends)****Diesel Engine/ Baseframe Mounted Accessories:****Cooling System**

- ✓ Engine heat guards
- ✓ Low coolant level alarm & shutdown (Depends on engine series)
- ✓ High temp. & Anti-erosion radiator upgrade for open type genset
- ✓ 50% antifreeze @-36°C

**Filters**

- ✓ Extra air filters for time-maintenance
  - Double heavy duty air filters
- ✓ Extra fuel filters for time-maintenance
- ✓ Extra oil filters for time-maintenance

**Exhaust**

- ✓ Residential silencer for open type genset
- ✓ Stainless steel silencer and kits
  - Heat protection guard

**Fuel & Oil**

- ✓ Separated / External fuel tank
- ✓ Water - fuel separator

**Custom-Made solutions****Diesel Engine/ Baseframe Mounted Accessories:****Cooling System**

- ✓ Anti-erosion radiator for silent type genset
- ✓ Remote radiator with heat exchanger
- ✓ Remote cooling tower with heat exchanger

**Filters**

- Mounted heavy duty air filter

**Exhaust**

- ✓ Mounted heavy duty air filter

**Fuel & Oil**

- Bulk base fuel tank
- Bundled base fuel tank

- ✓ 3 way fuel valve
- ✓ Manual bypass valve
- ✓ Lub oil make up tank
  - ✓ Lub oil drain pump
- ✓ Fuel level sensor
- ✓ Fuel cooler
- ✓ Automatic remote fuel supply with fuel level switch
  - & low fuel level alarm shutdown.
  - ✓ Coolant heater 220/240V
- ✓ Lub-oil heater for severe cold weather

### **Starting & Charging**

- ✓ Bulk starting battery -17°C below
- ✓ Battery removal switch
- ✓ Battery heater

### **Control System & Power Termination:**

### **Control System & Breakers**

- ✓ Different functional modules with
  - Tide Easycon refer to other table
- ✓ Mounted audible and visible lighting
- ✓ Control panel cover (80kva or below)
- ✓ Motorized circuit breaker 3 Poles
- ✓ Motorized circuit breaker 4 Poles
- ✓ ACB 3 Poles
- ✓ MCCB 4 poles
- ✓ Different breaker brands, like ABB etc
- ✓ Leakage protection switch

### **Starting & Charging**

- ✓ None

### **Control System & Power Termination:**

### **Control System & Breakers**

- ✓ Various standard sockets mounted outside the enclosure

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### **Optionals (All depends)**

### **Custom-Made solutions**

### **Brushless Alternator:**

- ✓ 12 Lead stator (change voltage depends)
  - ✓ Interchangeable S.A.E flanges and drive discs
- ✓ Convenient filters on air inlets and outlets
- ✓ Coastal type [ ] Alternator painting color P.M.G or auxiliary
- ✓ AREP for Leroy-Somer only
- ✓ Shunt trip
- ✓ Exterior potentiometer
- ✓ Auxiliary contacts and double bearing
  - ✓ Anti-condensation heater
- ✓ Stator thermal protection
- ✓ Quadrature droop kits

### **Brushless Alternator:**

- ✓ Temperature rise class F Marine type alternator IP upgrade MV

### **Enclosure & Canopy:**

### **Weather protective & Sound proof**

- ✓ R series
  - ✓ ISO 20ft containerized
  - ✓ ISO 40ft containerized
  - Stainless steel locks and hinges

### **Enclosure & Canopy:**

### **Weather protective & Sound proof**

- ✓ Super silent enclosure
- ✓ Weather proof enclosure
  - ✓ Flat sponge sound absorber enclosure
  - ✓ Porous sheet with rockwool sound absorber enclosure

Please refer to Tide Power sales department for full details of the above options.

### **Warranty**



Tide Power distributor, dealer, or authorized representative performs startup within 6 months of the date of shipment from the factory, warranty coverage will begin on the startup date (Register the startup date to Tide within 6 months is essential and can be enforced). This warranty does not apply to malfunctions caused by damages, unreasonable use, misuse, repair or service by unauthorized persons, or normal wear and tear.

### **Warranty Coverage**

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Generators used to commercial utility source:  
One (1) year or 1000 hours (whichever occurs first) from date of shipment from the factory or registered startup date.

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