

## Technical Specifications

### Diesel Generator Set

#### A-C28M

Voltage: 400/230V

Frequency: 50Hz



Genset Image for illustration purposes only

## Technical Information

Standby Power (ESP)	kVA	-
	kW	-
Prime Power (PRP)	kVA	25.0
	kW	20.0
Mechanical Structure		Open
Engine Brand		Cummins
Engine Model		4B3.9-G2
Alternator Brand		Hosem
Alternator Model		ASF184FS
Controller		Smartgen HGM6110N
Measure (L x W x H)	mm	1350X830X1150
Empty Weight	kg	660
Fuel Tank	L	N.A.
Noise Level for Soundproof	dB(A) at 7m	N.A.

Voltage (V)	Prime Power (PRP)		Standby Power (ESP)	
	(kVA)	(kW)	(kVA)	(kW)
380/220	25.0	20.0	-	-
400/230	25.0	20.0	-	-
415/240	25.0	20.0	-	-

#### Note:

**Prime Output:** Prime output is available for an unlimited number of annual hours in variable load application, in accordance with GB/T2820-97 (eqv ISO8528); a 10% overload capability is available for a period of 1 hour with a 12-hours period of operation.

**Standby Output:** The standby output is applicable for supplying emergency power for duration of a utility power interruption. No overlaid, utility parallel or negotiated outage operation capability is available at this rating.

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Fuzhou Hosem Power Co., Ltd. is a certified company with ISO 9001, ISO 14001 and CE Certificate.

We reserves 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.

Non-contractual document

## GENERAL DESCRIPTION

Specifically developed for the industrial applications, this stationary soundproof generator set is easy to use and straightforward to maintain. The available features & options are designed to fully meet the requirements of all industrial applications. The generator set will automatically start on mains failure and cool down and stop as soon as the mains come back. The generator set also controls the load transfer between mains (utility) and generator set. It can also be start-up by means of an external signal.

It's your solution for Predictable Power.

## ENGINE

4B series Cummins diesel 4 stroke engine with 4 Cylinders in line, with naturally aspirated, with direct injection and engine regulation via electronic management.

Engine Brand	Cummins	Bore (mm)	102.00
Model	4B3.9-G2	Stroke (mm)	120.00
R.P.M.	1500	Compression Ratio	17.3 : 1
Max. Power (kWm)	26.4	Type of Regulation	Electric
Fuel	Diesel	Min. Fuel Consumption	229.00 g/kW.Hr
No. of Cylinder	4 Cylinder in line	Oil Pan Capacity (L)	11.00
Engine Capacity (L)	3.9	Weight	308.00

### 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 Cooling	Coolant Capacity (L) Engine Only 28
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### Lubrication System

Gear pump 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 Pan Capacity (L)	11	Maximum Oil Consumption (L/Hr) 0.019
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### 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 (L/s)	33	Air Inlet Filter Type	Dry Type
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## Exhaust System

Interior and exterior aluminized steel exhaust silencer that is highly resistant to corrosion and with a water drainage system

T <sup>a</sup> Gas Emission (°C)	475	Number of Exhaust	1
Gas Flow (L/s)	9.96		

## Start System

Start system that uses an electrical motor, battery, battery disconnecter 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 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 plates design that guarantees it will withstand many discharges with large temperature changes.

Starter Voltage System (V)	24	Battery Type	Two of 80Amps Free Maintenance Battery
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## Fuel Supply System

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

Fuel Tank Capacity (L)	N.A.		
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## Fuel Consumption Panel (Range according to the standard configuration)

Load	Prime Power (PRP)		Standby Power (ESP)	
	(L/H)	Running Time (h)	(L/H)	Running Time (h)
25%	2.7	-	2.3	-
50%	4	-	4.1	-
75%	5.2	-	5.6	-
100%	6.7	-	7.5	-

## Alternator

Hosem alternator with 4 poles, with a lifetime lasting greased bearing, H class insulation, without brushes, 2/3 coil and AVR (Automatic Voltage Regulator)

Protection of all the windings by means of 2-part high quality polyester resin impregnation. The stator windings receive a double impregnation.

Excitation system with auxiliary winding with overload capacity 3 times the nominal current for 20 s.

Joining of engine and alternator through flexible disc coupling.

Regulations:

- CEI 2-3
- IEC 34-1
- EN 60034-1
- VDE 0530
- BS 4999-5000
- CAN/CSA-C22.2 No14-68-No100-95
- ISO 8528:3

Low Wave distribution

- $THC < 4\%$
- $THD < 4\%$
- $THF (IEC) < 2\%$
- $TIF (NEMA) < 40$

Incorporates electromagnetic emissions suppressor in accordance with standard VDE 0875, class H.

Brand	Hosem	Voltage Stability	+/-0.5%
Model	ASF184FS	Performance at 75% p.f 0.8 (%)	87.7
Alternator Power (kVA)	25.0	Performance at 100% p.f 0.8 (%)	86
Numbers of Wires	12 Wires	Working Temperature without Output Reduction	$\leq 40^{\circ}C$
IP Alternator	IP23	Working Altitude without Output Reduction	$\leq 1000m$
Excitation System	Self Excitation	Phase	3 Phase
AVR	SX460	Type	Brushless

## 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, passivated 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 joined to the bedplate using hardware, which allows disassembling it for maintenance or replacement. It has a drainage plug, wide cleaning cover and filler connection with plug and key.

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

## SOUNDPROOFED CANOPY FOR OPTIONAL

Soundproof generator set by means of cold-roll steel, phosphate steel, passivated and finish using polyester dust paint that guarantees a resistance of at least 720 hours in a saline mist chamber in accordance with standard ASM B-117-09.

Has IP44 protection, centre hoisting eyebolt and impact locks with key and door retainer.

It is lined inside with a noise-absorbing material made of mineral wool with a 30 mm thick waterproof (M0) protector veil with a density of 45 kg/m<sup>3</sup>.

It also has an emergency shutdown pushbutton that is accessible from the outside and an external fuel filler connection with cap and key.

## ELECTRIC PANEL

Electrical panel integrated in the generator set with Smartgen digital control plate, quick switching of the grounding system (TT, TN or IT) and emergency shutdown pushbutton.

Has an all-pole circuit breaker, manually actuated, with thermal-magnetic protection against overloads and short-circuits.

Circuit Breaker Rated Current (A)	-	Battery Charger Model	BAC06A
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Has a Smarten battery charge maintainer, designed to be permanently connected to the battery and maintains it charged to its maximum capacity.

Has no moving parts. The charger switches to floating mode when the charge is completed.

## CONTROL CARD

Smartgen control plate, HGM6110 with 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 HGM6110 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 132x64 pixel LCD screen with lighting, 5 navigation menubuttons, independent operational mode buttons, and alarms and status indicating LEDs.

For optional: Communications via USB, RS232, RS485, as well as DSEnet® 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, MANUAL AND TEST.

### Generator

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

### Grid

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

### Engine

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

### Protection

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



## ATS FOR OPTIONAL

Optional cabinet for switching between the grid and the generator set by means of a motorized switch with an integrated mechanical and electrical interlocking device.

Allows for the padlock locking function. Includes a Manual / Automatic mode selector and emergency manual control.

Safety switching for isolating the loads. High dynamic resistance against short-circuits.

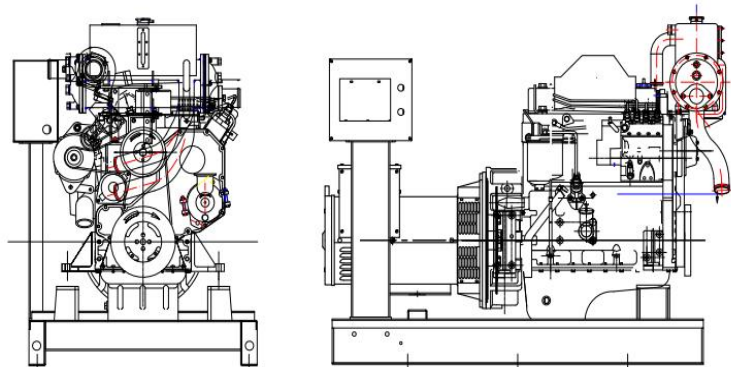
Position indicator with fully visualized cut-off. Stable positions not affected by changes in voltage and mechanical vibrations. External electrical control of the positions and test sequences.

High number of operations. IP54 protection. Connections: Lower/lower.

ATS Capacity (A)	-
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## DIMENSION WEIGHT AND DESIGN OF DIESEL GENERATOR

Length (mm)	1350
Width (mm)	830
Height (mm)	1150
Weight (kg)	660



## PROFORMANCE CLASS

Execution class in accordance with ISO 8528/5 (2005) taking into account the behaviour 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.

Proformance Class	G3
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Manufacturer reserves the right to make changes in model, technical specification, color, equipment and accessories without prior notice.