

**kirloskar**  
powergen

**60Hz**

**GENSET SERIES**

MODELS

96WS60

96W60



**BETTER POWER  
FOR A**

*limitless*

**T O M O R R O W**

MODELS:

96WS60

Type: SAE

96W60

Type: Open



ENGINE:

KIRLOSKAR 4R1040TA  
LIQUID COOLED



ALTERNATOR:

STAMFORD UCI224G1  
BRUSHLESS



CONTROLLER:

DEESEA DSE4522 A2  
MICROPROCESSOR BASED



Power Factor: 0.8 [Lag]



Line Voltage: 220V / 380V



Phase Voltage: 127V / 220V



Fuel Tank Capacity:

96WS60: 150L

96W60: 158L



Sound Level at 7m at 75%

load as per ISO8528-10:

96WS60: 70 dB(A)

Standby Power (ESP) kVA / kWe: 96 / 76.8

Prime Power (PRP) kVA / kWe: 87 / 69.6

Phase / Volts: 3 Phase / 220V / 380V

SAE: Sound Attenuated Enclosure, Ratings are as per ISO 8528-1; refer page 6 for definitions

<sup>1</sup>+5% tolerance is applicable as per ISO 3046. Fuel consumption based on diesel fuel with a specific gravity of 0.85 and conforming to BS 2869, Class A2.

Fuel Consumption % of PRP<sup>1</sup>

L/hr

50% Load

10.5

75% Load

14.7

100% Load

19.2

BUILT FOR EFFICIENCY. ENGINEERED FOR POWER.



High Performance & Reliability



Low Fuel Consumption



Easy Installation



Low Maintenance Cost



Service Support in all Countries of Operation



Extended Service Intervals

# PERFORMANCE ASSURANCE



Total Quality Management System



Engines & Generating set fully manufactured by us in facilities certified to ISO 9001, ISO 14001 and OHSAS 18001



Generating set complies to ISO 8528



Engines comply to ISO 3046 and AC Generators comply to BS5000, IEC34

## STANDARD AND OPTIONAL FEATURES



### Generating Set

(\*Applicable only for SAE type)

- |                                   |                             |                                 |
|-----------------------------------|-----------------------------|---------------------------------|
| ● Top Lifting Arrangement*        | ● Door for Radiator Access* | ● Stainless steel door hinges*  |
| ● Silencer Mounted Inside Canopy* | ● Coolant Drain Arrangement | ● Control Panel Door Stopper*   |
| ● External Fuel Filling Access*   | ● Mesh on Exhaust Tail Pipe | ○ Fuel Priming Manual Pump      |
| ● Longer Fuel Tank Breather Tube  | ○ Fuel Transfer Pump        | ○ External Standalone Fuel Tank |



### Engine

- |                           |                            |                                             |
|---------------------------|----------------------------|---------------------------------------------|
| ● SMF Battery             | ● Water Separator          | ● Dual (Electrical + Mechanical) Fuel Gauge |
| ● Lube Oil Drain Pump*    | ● Over-Cranking Protection |                                             |
| ● Guard for Rotating Part | ○ Jacket Water Heater      |                                             |



### Alternator

- |                           |                                           |
|---------------------------|-------------------------------------------|
| ○ Alternator Space Heater | ○ Remote Voltage Adjustment Potentiometer |
| ○ PMG                     | ○ Alternator Inlet Louver Filter          |



### Controls

- |                                       |                                    |                          |
|---------------------------------------|------------------------------------|--------------------------|
| ● Automatic Starting and AMF Facility | ● Communication Port RS485         | ○ Static Battery Charger |
| ○ 4 Pole Circuit Breaker              | ○ Kirloskar Remote Monitoring Unit | ● 3 Pole 250A MCCB       |
| ○ ATS Panel                           | ○ 12V DC Hooter                    | ○ Dummy Load Bank        |

- Standard Feature
- Optional Feature



# ENGINE SPECIFICATIONS 96WS60 / 96W60

## PHYSICAL DATA



|                       |                            |
|-----------------------|----------------------------|
| Engine RPM            | 1800                       |
| Configuration         | Inline                     |
| Cylinders             | 4                          |
| Type                  | Four Stroke                |
| Bore x Stroke (mm)    | 105 x 120                  |
| Displacement (L)      | 4.16                       |
| Cooling               | Liquid Cooled              |
| Aspiration            | Turbo Charged After Cooled |
| Compression Ratio     | 18:1                       |
| Piston Speed (m/s)    | 7.2                        |
| HP Prime @ 1800 RPM   | 112                        |
| HP Standby @ 1800 RPM | 123.2                      |

## AIR SYSTEM



|                                                         |                 |
|---------------------------------------------------------|-----------------|
| Air Filter Type                                         | Dry Replaceable |
| Air Volume Required for Combustion (m <sup>3</sup> /hr) | 462             |
| Air Volume Required for Cooling (m <sup>3</sup> /hr)    | 12600           |
| Air Volume Required by Alternator (m <sup>3</sup> /hr)  | 778             |
| Total Fresh Air Required (m <sup>3</sup> /hr)           | 13839           |

## COOLING SYSTEM



|                             |                                                                                             |
|-----------------------------|---------------------------------------------------------------------------------------------|
| Cooling system capacity (L) | 24                                                                                          |
| Coolant Type                | Ethylene glycol based premixed with water in ratio 50:50, anti freeze & anti corrosion type |
| Radiator Fan Load (hp)      | 4.5                                                                                         |

## ELECTRICAL SYSTEM



|                              |                                     |
|------------------------------|-------------------------------------|
| Starting Arrangement         | 12V Electric                        |
| Starter Battery Rating       | 120Ah                               |
| Battery Charging Alternator  | Engine Mounted 12V                  |
| Battery Charging Alternator  | 35A                                 |
| Battery Charger <sup>2</sup> | 12V 2A/5A with Float and Boost Mode |

## LUBRICATION SYSTEM



|                                                |                           |
|------------------------------------------------|---------------------------|
| Type of Lube Oil Filter                        | Full Flow Spin On Type    |
| Oil to be used                                 | SAE 15W40 API: CI4        |
| Oil Pump Type                                  | Through G-Rotor Gear Pump |
| Lube Oil Sump Capacity (L) Refill / First Fill | 9.5 / 11                  |
| Lube Oil Consumption                           | 0.3% of Fuel Consumption  |

## FUEL SYSTEM



|                     |                             |
|---------------------|-----------------------------|
| Type of Fuel Filter | Two Stage Spin on Type      |
| Governor Type       | Mechanical                  |
| Class of Governing  | ISO 8528-5, Class G2        |
| Recommended Fuel    | Class A2, High Speed Diesel |

## EXHAUST SYSTEM



|                                                  |                                     |
|--------------------------------------------------|-------------------------------------|
| Exhaust Gas Flow Rate (kg/hr)                    | 460                                 |
| Maximum Exhaust Gas Temperature (°C)             | TBA                                 |
| Maximum Allowed Back Pressure (mm of Hg)         | 50                                  |
| Flange Details for Exhaust Piping Extension (mm) | PCD 148 +/-0.5, 4 Holes 12.0 +/-0.5 |

<sup>2</sup> Optional Extra Accessory



# ALTERNATOR SPECIFICATIONS 96WS60 / 96W60

## ALTERNATOR PHYSICAL DATA



|                           |                  |                                      |
|---------------------------|------------------|--------------------------------------|
| Continuous Rating         | Insulation Class | H                                    |
|                           | kVA at 0.8 PF    | 87                                   |
|                           | Temp Rise (°C)   | 125 / 40°C                           |
| Number of Bearings        |                  | 1                                    |
| Pole                      |                  | 4                                    |
| Leads                     |                  | 6                                    |
| Winding Pitch             |                  | 2 / 3                                |
| Ingress Protection Rating |                  | IP23                                 |
| Voltage Regulator         |                  | AS440                                |
| Recommended Earthing Type |                  | Solid, separate for neutral and body |

## ALTERNATOR OPERATING DATA



|                                              |                                         |      |
|----------------------------------------------|-----------------------------------------|------|
| Over Speed (RPM)                             | 2250                                    |      |
| Excitation                                   | Self-excited (Brushless)                |      |
| Cooling Method                               | Forced through shaft mounted blower fan |      |
| THD at full linear balanced load AC waveform | Less than 5%                            |      |
| Voltage Regulation (%)                       | ± 1.0                                   |      |
| Voltage                                      | 220V                                    | 380V |
| Efficiency at full load (%)                  | 90.8                                    | 90.5 |
| Reactance per unit (Xd)                      | 2.47                                    | 2.66 |
| Reactance per unit (X'd)                     | 0.19                                    | 0.20 |
| Reactance per unit (X''d)                    | 0.13                                    | 0.14 |



# CONTROL SYSTEMS FEATURES AND SAFETIES

## ON SCREEN DISPLAY

|                                   |   |
|-----------------------------------|---|
| Generator Volts, Amps. Hz         | Y |
| Generator kW, kVA, kVAr           | Y |
| Generator per phase PF            | Y |
| Generator kWhr meter              | Y |
| Earth current (A)                 | N |
| Grid (Mains) Voltage (L-L)        | Y |
| Battery Voltage (V)               | Y |
| Engine start attempts             | N |
| Engine Temperature (oC)           | Y |
| Engine speed (RPM)                | Y |
| Engine Run Hours (Hours & Min.)   | Y |
| Lube oil Pressure (kPa, PSI, bar) | Y |
| Fuel level (%)                    | Y |

## PROTECTIONS

|                                      |       |
|--------------------------------------|-------|
| Low oil pressure                     | N     |
| High coolant temperature             | Y     |
| Low fuel level                       | Y     |
| Low coolant level                    | N     |
| Under & over speed                   | Y     |
| Low & high battery Voltage           | Y     |
| Low charge alternator                | Y     |
| Emergency stop                       | N     |
| Fail to start & fail to stop warning | Y     |
| Auto remote start/stop Di            | ..... |
| Under & over voltage                 | Y     |
| Under & over frequency               | Y     |
| Over kW or Overcurrent               | N     |

## WARNING

## SHUTDOWN

## INDICATION

## DIGITAL INPUT

|       |       |       |
|-------|-------|-------|
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| N     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | N     | Y     |
| Y     | Y     | ..... |
| ..... | ..... | Y     |
| Y     | Y     | ..... |
| Y     | Y     | ..... |
| Y     | Y     | ..... |

## COMMUNICATION PORTS

|       |   |
|-------|---|
| RS485 | Y |
| RS232 | N |

Y - Available

N - Not Available

..... Not Applicable



# DOCUMENTS AND QUALITY STANDARDS

## Documents

Generating set user manual, engine operation and maintenance manual – in soft form

## Quality Standards

ISO 8528, ISO 3046, IS 10002, BS5514, DIN 6271, ISO 9001, ISO 14001

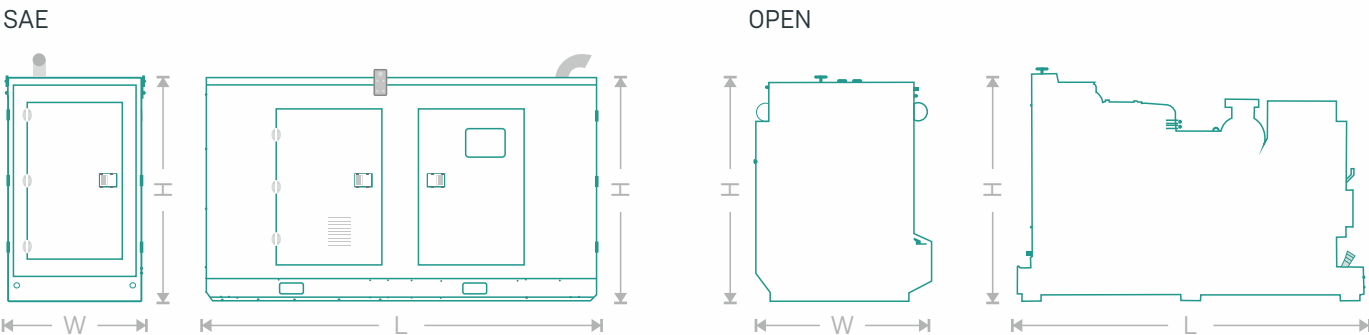
# WEIGHT AND DIMENSIONS

## 9 6 W S 6 0

|       |                                             |                                                |
|-------|---------------------------------------------|------------------------------------------------|
| Type: | Overall Dimension <sup>3</sup> (LxWxH) cms: | Weight <sup>4</sup> with Oil and Coolant (kg): |
| SAE   | 297 x 116 x 166                             | 1950                                           |

## 9 6 W 6 0

|       |                                             |                                                |
|-------|---------------------------------------------|------------------------------------------------|
| Type: | Overall Dimension <sup>3</sup> (LxWxH) cms: | Weight <sup>4</sup> with Oil and Coolant (kg): |
| Open  | 211 x 106 x 146                             | 1200                                           |



<sup>3</sup>Dimensions are for logistics purpose only. Please refer installation / GA drawing for installation.

<sup>4</sup>Weight mentioned is for indicative only. Actual weight may vary based on configuration.

Generating set ratings definitions as per ISO8528: (De-rating is applicable for climatic conditions other than standard reference conditions of ISO8528-1)

Standby Rating / Emergency Standby power / ESP: These ratings are applicable for supplying electrical power at variable load in the event of a utility power failure. The standby power is maximum power available with no overload permitted on these ratings. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP. The alternator on this model is peak continuous rated (as defined in ISO 8528-3)

Prime Rating / PRP: These ratings are applicable for supplying continuous electrical power at variable load in lieu of commercial purchased power. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours. The permissible average power output over 24 hours of operation shall not exceed 70% of the PRP.

Continuous Rating / COP: These ratings are applicable for supplying power continuously to a constant load up to the maximum output rating for unlimited hours. No sustained overload capability is available for this rating.



## A RICH HERITAGE OF OVER A CENTURY OF ENGINEERING EXCELLENCE.

Kirloskar power generating sets prioritize user experience, delivering exceptional features and benefits. Streamlined installation and enhanced dependability to expedited service, reduced maintenance costs, and optimized performance.

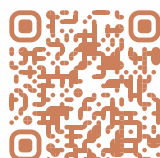
Kirloskar Powergen sets itself apart with groundbreaking engineering that establishes new industry benchmarks.

*limitless* **POTENTIAL, SUSTAINABLE PRACTICES**

Our state-of-the-art manufacturing facility embodies our commitment to sustainable practices. We partner with nature to power the facility itself, transforming waste into valuable resources. This focus on sustainability inspires both our workforce and surrounding communities.

It's here, where cutting-edge technology meets exceptional skills,  
that we engineer solutions to empower limitless possibilities.

Discover our Plant with a  
QR Code Scan.





SHAPING THE FUTURE.  
DELIVERING POWER GLOBALLY.

INGENIOUS DESIGN.  
UNMATCHED PERFORMANCE.

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FOR A

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T O M O R R O W

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