

# Diesel Generator Set

## X1.3 Series

7.5-15 kVA, 6-12 kW Prime



### Latest Technology And Unmatched Performance

- The Cummins® X1.3 series rugged engine and world class Stamford alternator powered diesel generator set
- Advanced in-cylinder technology to meet latest emission norms without any after-treatment device.
- **Best in class transient response**
- **High altitude capabilities**
- Smart aesthetic and superior finish
- Compact in size with optimum power to weight ratio

### Environment Friendly Power

- Class defining technology engine is designed to meet stringent exhaust emission tests as per revised MoEF norms, thus offering environment friendly power.
- The Cummins® diesel generator sets are available with the lowest noise levels in its range

### Lowest Operating Cost And Comprehensive Warranty

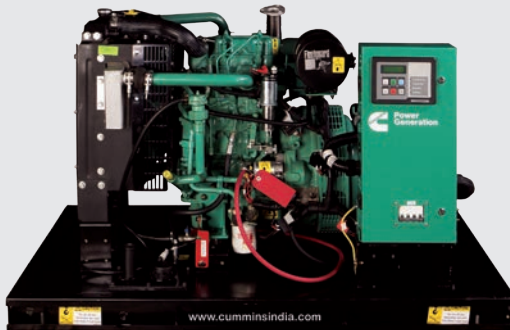
- Highly reliable and durable product
- All elements are designed to work together to maximize efficiency even at part loads, offering the advantage of lowest operating costs.
- **500 Hours/ 1 year service interval**
- **Industry acknowledged best-in-class comprehensive warranty on the entire package including rubber components**

### Single Source Power Assurance

- All the major components – the engine, alternator, control system and canopy are designed, manufactured and tested by Cummins India.
- Best and largest customer support network in India, capable of providing round-the-clock service and spares support
- **All these things put together, Cummins® offers you SINGLE SOURCE POWER ASSURANCE**

## Engine

- Cummins X1.3 series, 2 cylinder, In-line 4 stroke, radiator cooled engine
- Well designed air handling system with
  - Dry type, Replacable paper element air cleaner with restriction indicator
  - Air to air aftercooling
  - Optimised turbocharger for increased altitude capabilities
- Best in class fuel economy with
  - Inline fuel pump with A1 class mechanical governing
  - Spin on fuel filter
- Standard integral set-mounted radiator system, designed and tested for 50°C ambient temperatures
- Full flow spin on lube oil filter
- First fill of lube oil and coolant
- Electrical starter motor with soft start engagement feature
- Battery charging alternator
- 1 X 12 V DC battery



## Alternator

- Stamford P0 and PT0 alternator frames from Cummins Generator Technologies
- Brushless type, Screen protected, Revolving field, Self excited alternator conforming to IS/IEC 60034-1
- 3 Phase reconnectable winding with 12 terminals brought out for connection
- Dedicated winding specially designed for 1 phase operation
- Better motor starting capability
- Best in class efficiency
- Compact design with sealed bearings for longer life and lesser maintenance
- Impregnation on all wound components for better mechanical strength

## Control Panel

Control panel is manufactured with 14/16 gauge CRCA sheet and is powder coated for weather-proof and long lasting finish. The control panel consists of the following parts:

- PS0500 controller
- Aluminum bus bars with suitable capacity with incoming/outgoing terminals
- Indicating lamps for 'Load ON' and 'Set Running'
- Instrument fuses duly wired and ferruled
- Circuit breakers of suitable rating with overload and short circuit protections

## PS0500 Features

Cummins PowerStart™ PS0500 control is a microprocessor based generator set monitoring and control system. This control includes an intuitive operator interface that allows for complete generator set control as well as system metering, fault annunciation, configuration and diagnostics.



- Intuitive operator interface which includes LED backlit LCD display with tactile feel soft-switches and generator set status LED lamps
- Remote start-stop
- Engine Metering: Oil pressure, Engine temperature, Starting battery voltage, Engine running hours
- AC Alternator Metering: L-L Voltage and L-N Voltage, Current (phase and total), kVA (phase and total) and Frequency.
- Engine Protection: Low lube oil pressure, High/Low coolant temperature, Battery Over/Under/Weak Volts, Fail to Crank/Start, Sensor failure, Cranking lockout, Low fuel level.
- AC Alternator Protection: Over/Under Voltage, Over/Under Frequency, Loss of AC sensing.
- Data Logging: Engine hours, Control hours and upto 5 recent fault codes
- Configurable glow plug control
- 12 Volt DC operation
- Sleep mode
- Modbus interface (RS485 RTU)
- InPower compatible (PC based service tool)
- Certifications - meets the requirement of relevant ISO, EN, Mil Std. and CE standards

## Silencer

- Critical grade silencer suitably optimised to meet stringent sound emission standards laid down by MoEF / CPCB

## Mounting Arrangement

- Engine and alternator are mounted on a common MS fabricated base frame with AVM pads.
- Base frame with integral fuel tank is provided with drain plug, air vent, inlet and outlet connection, level indicator and provision for cleaning

## Optional

- **Engine:** Coolant heater, Oil drain pump, Heavy duty air cleaner, Electronic governing
- **Alternator:** Excitation boost system
- **Control Panel:** Microprocessor / relay based AMF control panel
- **Others:** Trolley mounted mobile sets

### Acoustic Enclosure

- Specially designed to meet stringent MoEF/ CPCB norms of 75 dBA @ 1mtr at 75% load under free field conditions
- The acoustic enclosure is made of CRCA sheets in munsel green shade and a structural/ sheet metal base frame painted in black.
- High quality noise absorbant and fire-retardant grade acoustic Insulation material (P.U. Foam) complying to IS 8183
- Two point lifting for easy handling at customer site

- Designed to have optimum serviceability
- Air inlet louvers specially designed to operate at rated load
- Made on special purpose CNC machines for consistency in quality and workmanship
- **11 tank pretreatment process and UV resistant Powder Coating of all parts to withstand extreme environment**
- Use of special hardware for longer life
- Flush styling - no projections
- Fluid drains for lube oil and fuel
- Fuel filling arrangement inside the enclosure

### Technical Data

#### Generator set specification

Model	C7.5D5P		C10D5P		C15D5P	
Duty	Prime		Prime		Prime	
Power Rating kVA / kW <sub>e</sub>	7.5/6		10/8		15/12	
No. of Phases	3 Phase	1 Phase	3 Phase	1 Phase	3 Phase	1 Phase
Output Voltage (V)	415	230	415	230	415	230
Power Factor	0.8 (lagging)		0.8 (lagging)		0.8 (lagging)	
Current (3 phase/ 1 phase) (A)	11	33	14	44	21	65
Frequency (Hz) and RPM	50 Hz, 1500 RPM		50 Hz, 1500 RPM		50 Hz, 1500 RPM	

#### Engine Specification

Make	Cummins		Cummins		Cummins	
Model	X1.3TAA-G1		X1.3TAA-G1		X1.3TAA-G1	
MoEF Certified Power (hp)	23		23		23	
Required Power for Rated kVA (hp)	12		15		21	
Cooling	Liquid Cooled (EG Compleat 50:50)		Liquid Cooled (EG Compleat 50:50)		Liquid Cooled (EG Compleat 50:50)	
Aspiration	Turbocharged, Charge Air Cooled		Turbocharged, Charge Air Cooled		Turbocharged, Charge Air Cooled	
No. of cylinders	2, In-line		2, In-line		2, In-line	
Bore (mm) x Stroke (mm)	95 x 91		95 x 91		95 x 91	
Compression ratio	18.3:1		18.3:1		18.3:1	
Displacement (litre)	1.29		1.29		1.29	
Fuel	High Speed Diesel		High Speed Diesel		High Speed Diesel	
Fuel consumption @75% load with radiator and fan* (litre/hr)	2.2	2.3	2.6	2.67	3.41	3.5
Fuel consumption @100% load with radiator and fan* (litre/hr)	2.64	2.75	3.17	3.24	4.35	4.47
Performance class of generator set	ISO 8528-5 G2		ISO 8528-5 G2		ISO 8528-5 G2	
Starting system	12 V DC Electrical		12 V DC Electrical		12 V DC Electrical	
Lube oil specification	CH4 15W40		CH4 15W40		CH4 15W40	
Lube oil sump capacity, High-Low level (litre)	4 - 3		4 - 3		4 - 3	
Total lubrication system capacity (litre)	4.5		4.5		4.5	
Lube oil consumption @ full load** (litre/hr)	0.01		0.01		0.01	
Total coolant capacity (litre)	5.5		5.5		5.5	
Exhaust pipe size (inch)	1.5		1.5		2	
Total wet weight (Engine+Radiator)** (kg)	180		180		180	
Length x Width x Height (Engine) (mm)	481 x 715 x 662		481 x 715 x 662		481 x 715 x 662	
Mean Piston speed (m/s)	4.6		4.6		4.6	
Combustion air intake @100% load (±5%) (cfm)	61		61		61	
Exhaust Temperature (°C)	346		346		346	

#### Alternator Specification

Make	Stamford (CGT)		Stamford (CGT)		Stamford (CGT)	
Alternator frame	PI044D	PT044F	PI044E	PT044G	PT044G	PT144D
Enclosure	IP23		IP23		IP23	
Voltage regulation (Max.)	±1%		±1%		±1%	
Class of Insulation	H Class		H Class		H Class	
Winding Pitch	2/3		2/3		2/3	
Stator Winding	Double layer lap		Double layer lap		Double layer lap	
Rotor	Dynamically Balanced		Dynamically Balanced		Dynamically Balanced No	
Waveform distortion/ Total Harmonic Distortion	No load < 1.5 %, Non distorting balanced linear load < 5 %		No load < 1.5 %, Non distorting balanced linear load < 5 %		No load < 1.5 %, Non distorting balanced linear load < 5 %	
Maximum Unbalanced Load across phases <sup>#</sup>	less than or equal to 25%		less than or equal to 25%		less than or equal to 25%	
Telephonic Harmonic factor	< 2%		< 2%		< 2%	

\* Fuel consumption data is based on diesel having specific gravity of 0.85 and conforming to IS:1460. Fuel consumption tolerance is +5%

\*\* Oil consumption data is based on oil having specific gravity of 0.89 and meeting CH4 API categories

<sup>#</sup> With the condition that none of the phases exceeds its rated current

### Rating Definitions

**Prime Power (PRP):**

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528.

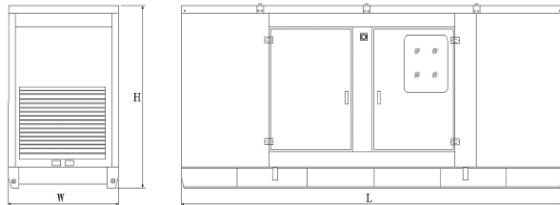
### Conformance Standards

- IS/IEC 60034-1
- IS 1460
- ISO 8528
- ISO 3046
- ISO 9001
- IS 13018

### Typical Enclosed Genset Dimensions

Genset Model	Rating (kVA)	Length (mm)	Width (mm)	Height (mm)	Wet Weight <sup>##</sup> (kg)	Standard Fuel tank Capacity (litre)
C7.5D5P	7.5	1460	940	920	600	56
C10D5P	10	1460	940	920	600	56
C15D5P	15	1600	940	1100	640	62

<sup>##</sup> Approximate Weight



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