



### General specifications of the generating set

PRP power	kVA/kWe	20/16
STP power	kVA/kWe	22/18
Engine revolutions	r.p.m	1500
Voltage type		Three-phase
Standard voltage	V	400/230
Optional voltages	V	Please, contact us
Frequency	Hz	50
Power factor	cos φ	0,8
Fuel		Diesel
Tank (open version)	l	160
Tank (soundproof version)	l	200

**Denomination**

**GEN** **2500** **H** **C**

type of generating set  
stand-by power (kVA)  
engine's manufacturer  
soundproof version

- ⊗ Engine-alternator assembly with flexible disk, mono-block direct coupling.
- ⊗ Folded steel base frame, electro-welded and painted with a primer coat and a two-component finish coat.
- ⊗ Rubber anti-vibration system between the mono-block and the base frame.
- ⊗ Guards for moving parts
- ⊗ Guards for hot parts.
- ⊗ Exhaust gas silencer -25dB with flexible and connecting clamps to the engine in open version and -30dB integrated within the canopy in soundproof version.
- ⊗ Engine pre-heater in automatic or parallel operation (range 5-20kVA, optional).
- ⊗ Control panel.
- ⊗ Automatic battery charger in automatic or parallel operation generating sets.
- ⊗ Four-pole circuit breaker.
- ⊗ Emergency stop push button.
- ⊗ Generator's electrical grounding installation (ground spike not included).

### EC marking directives and applicable standards

- ⊗ 2006/42/EC on Machine Safety.
- ⊗ 2006/95/EC Low Voltage Directive.
- ⊗ 2004/108/EC on Electromagnetic Compatibility.
- ⊗ 2005/88/EC amending Directive 2000/14/EC on the approximation of the laws of the Member States relating to the noise emission in the environment by equipment for use outdoors.
- ⊗ EN 12100:2012, EN 13857:2008, EN 60204-1:2007.

### Reference environmental conditions in accordance with Standard ISO 8528-1:2005

1000mbar, 25°C, 30% relative humidity.

### Prime Power (PRP)

In accordance with ISO 8528-1:2005, this is the maximum power available for a variable power sequence for an unlimited number of hours while in compliance with the maintenance schedules prescribed by the manufacturer and under such conditions as defined by the same. Permissible average power for a period of 24 hours shall not exceed 70% of PRP. 10% overload is allowed for 1 hour out of every 12h (STP).

### Emergency Standby Power (ESP)

In accordance with ISO 8528-1:2005, this is the maximum power available for a variable power sequence in the event of a mains failure or under test conditions which shall not exceed 200h/year and in compliance with the maintenance schedules prescribed by the manufacturer and under the environmental conditions defined by the same. Permissible average power for a period of 24 hours shall not exceed 70% of ESP. No overload is allowed.

GENESAL reserves the right to modify any feature without notice.

**Engine specifications**

Manufacturer		Kohler
Model		KDI 1903 M
Displacement	l	1,861
Engine revolutions	r.p.m.	1500
Operating cycle	Strokes	4
Cylinders	No.	3
Bore	mm	88
Stroke	mm	102
Compression ratio		22
Cylinder arrangement		L
PRP net power	kWm	17,3
STP net power	kWm	19
Induction system		Natural
Intake air flow	m <sup>3</sup> /h	66,13
Exhaust gas flow	m <sup>3</sup> /h	202
Exhaust gas temperature	°C	540
Maximum allowable back pressure	kPa	5
Type of cooling		Air/Water
Type of cooling liquid		Ethylene glycol 50%
Total coolant capacity	l	6,8
Cooling air flow	m <sup>3</sup> /h	1700
Total oil capacity	l	8,9
Starting system	V	12
Battery	Ah	1x52
Starter motor power	kW	2,2
Fuel consumption		
100% of load	l/h	5,31
75% of load	l/h	3,89
50% of load	l/h	2,65
Speed regulator		Mechanical

**Optional components**

- ⊗ Automatic fuel transfer system.
- ⊗ Air intake and outlet sound attenuators of -30dB.
- ⊗ Additional fuel tanks.
- ⊗ Greater attenuation exhaust gas silencer.
- ⊗ Electronic speed governor for engines which include a mechanical control as a standard.
- ⊗ Low coolant level sensor for engines that do not include it as a standard.
- ⊗ Low oil level sensor in engines that do not include it as a standard.
- ⊗ Hoppers, bellows and cooling air ducts.
- ⊗ Exhaust gas pipes.
- ⊗ Others (please contact us).



**Specifications of the alternator**

Manufacturer		Leroy Somer
Model		TAL 040 F
Poles	No.	4
Threads	No.	12
Insulation rating	Class	H
IP protection rating	Class	23
Excitation system		Self-excited, brushless
Voltage regulator		AVR with potentiometer
Type of coating		Vacuum impregnation
PRP power	kVA	20
STP power	kVA	22
Alternator revolutions	r.p.m.	1500
Frequency	Hz	50
Power factor	cos $\varphi$	0,8
Efficiency at 100% load	%	86,1
Short-circuit capacity	%	300% I <sub>n</sub> (10s)
Cooling air flow	m <sup>3</sup> /h	216

**Optional components**

- ⊗ Tropicalized and marine varnish for protection.
- ⊗ Anti-condensation heater.
- ⊗ Differential protection.
- ⊗ PT100 probes.
- ⊗ Elastic coupling.
- ⊗ Other (please contact us).





### Manual/ automatic control unit (GEINTEL)

The GEINTEL control unit, developed by Comap to Genesal, can start the generating set through a manual signal, an external signal or when detecting a mains voltage failure through its three-phase sensor. It features a screen displaying all the parameters of the generating set and the grid, as well as protection alarms. It keeps an event log with all events that have occurred (more than 100 events).

It manages the operating orders of switchover, whether it is manual or automatic.

It includes a microprocessor and software for the manager of the parameter of the generating set, the alarms, the measurement devices, and can also be started for no-load tests.

### Parallel operation control unit (GEINTEL P)

Parallel operation control unit GEINTEL P, developed by Comap to Genesal, manages the synchronization among generating sets or synchronization to the grid, depending on the option selected.

The start of the generating set(s) may occur because of a voltage failure or an external order.

In the event of parallel operation of generating sets, several operation modes are possible as the control unit allows for different configurations, including the starting of all the generators in the plant regardless of the load, connecting-disconnecting generators based on the load, maintain all sets in operation on safety grounds, etc.

In the event of synchronizing the generating set to the grid, the main modes of operation are as follows:

- ⊗ Prevent the second zero in the switching when power returns.
- ⊗ Synchronizing for connecting or disconnecting the installation and the generating set(s) or vice versa
- ⊗ Exporting to the grid.
- ⊗ Supplementing mains power, etc.

It includes a screen displaying the parameters of the generating set, the grid and synchronization as well as protection alarms, and keeps an event log of all the event that have occurred (more than 220 events). It manages the operating orders for switching whether in the automatic or manual mode.

It includes a microprocessor and software for the management of the parameter of the unit, alarms, and external measuring devices, and may be started for no-load tests.





**Technical specifications of the control unit**

		GEINTEL	GEINTEL P
GENSET READINGS	Voltage between phases	•	•
	Voltage between phase and neutral	•	•
	Amperage	•	•
	Frequency	•	•
	Apparent power (kVA)	•	•
	Active power (kW)	•	•
	Reactive power (kVAr)	•	•
	Power factor	•	•
GRID READINGS	Voltage between phases	•	•
	Voltage between phase and neutral	•	•
	Amperage	X	X
	Frequency	•	•
ENGINE READINGS	Coolant temperature	•	•
	Oil pressure	•	•
	Level of fuel (%)	•	•
	Battery voltage	•	•
	RPM	•	•
	Battery charge alternator voltage	•	•
ENGINE PROTECTION	High cooling water temperature	•	•
	High cooling water temperature sensor	•	•
	Low oil pressure	•	•
	Low oil pressure sensor	•	•
	Low level of cooling water	•	•
	Failed to stop	•	•
	Battery high voltage	•	•
	Battery power loss	•	•
	Batter charge alternator failure	•	•
	Overspeed	•	•
	Low speed	•	•
	Failed start-up	•	•
	Emergency stop	•	•
ALTERNATOR PROTECTION	High frequency	•	•
	Low frequency	•	•
	High voltage	•	•
	Low voltage	•	•
	Short circuit	•	•
	Asymmetry between phases	•	•
	Incorrect sequence of phases	•	•
	Reverse power	X	•
	Overload	•	•
	Loss of generating set signal	•	•

• Standard ◊ Optional X Not included



**Technical specifications of the control unit**

		GEINTEL	GEINTEL P
MEASUREMENT	Total hours counter	•	•
	Kilowatt meter	•	•
	Valid start-up meter	•	•
	Maintenance (subtracting hours)	•	•
COMMUNICATION MODULES	RS232	•	•
	RS485	◊	◊
	IB-LITE	◊	◊
	GPRS	◊	◊
COMMUNICATIONS	Software for PC	•	•
	GSM/GPRS modem	◊	◊
	Remote screen	◊	◊
	J1939	◊	◊
	Modbus RTU	◊	◊
	Modbus RTU/TCP IP	◊	◊
	Optional internet connection & web server	◊	◊
	Signal expansion module		
	- BIO7 → 7I + 7O + 1TC	◊	◊
	- BIO8 → 8EI + 8O	◊	◊
- IG-IOM → 8I + 8O + 4AI	◊	◊	
- IGS-PTM → 8I + 8O + 4AI + 1AO	◊	◊	
FEATURES	Alarms history	>100	>220
	External start	•	•
	Start disabling	•	•
	Mains failure start	•	•
	Generator contactor activation	•	•
	Mains and Generator contactor activation	•	•
	Fuel transfer control	◊	◊
	Generating set forced operation	•	•
	Programmable alarms	◊	◊
	Starting the generator in test mode	•	•
	Programmable outputs	◊	◊
	Multilingual	•	•
SPECIAL APPLICATIONS	GPS tracking	◊	◊
	Synchronism	X	•
	Synchronism with the mains	X	•
	Suppression of second zero	X	•
	Replicated panel	◊	◊

• Standard ◊ Optional X Not included



### Automatic switchboard (optional)

Mains- generating set switchboards are of 2 types:

1 - Those using contactors

- ⊗ From 25A to 110A.
- ⊗ Mechanical and electrical interlock.
- ⊗ Mounted on a metal enclosure or on a mounting plate.
- ⊗ Terminal block for manoeuvre, mains and service detection.

2 - Those using motorized disconnectors

- ⊗ From 125A up to 3200A.
- ⊗ Mechanical and electrical interlock.
- ⊗ The automatic operation mode is controlled by potential free dry contacts.
- ⊗ Three stable positions (I,0,II), with padlocking option.
- ⊗ Disconnection shall be plainly visible
- ⊗ Automatic switch under load.
- ⊗ Manual emergency operation.
- ⊗ AUTO/MANUAL selector switch.
- ⊗ Mounted on a metallic enclosure or on a mounting plate.

### Complies with the following regulation

- |                  |                    |
|------------------|--------------------|
| ⊗ IEC 60947-3    | ⊗ IEC 60947-6-1    |
| ⊗ EN 60947-3     | ⊗ EN 60947-6-1     |
| ⊗ NBN EN 60947-3 | ⊗ NBN EN 60947-6-1 |
| ⊗ BS EN 60947-3  | ⊗ BS EN 60947-6-1  |
| ⊗ GB 14048       | ⊗ VDE 0660-107     |

### Characteristics and dimensions

Current	A	32
Dimensions (Height x Width x Depth)	mm	400x300x200
Weight	Kg	18

### Switching by contactors



### Switching by disconnectors





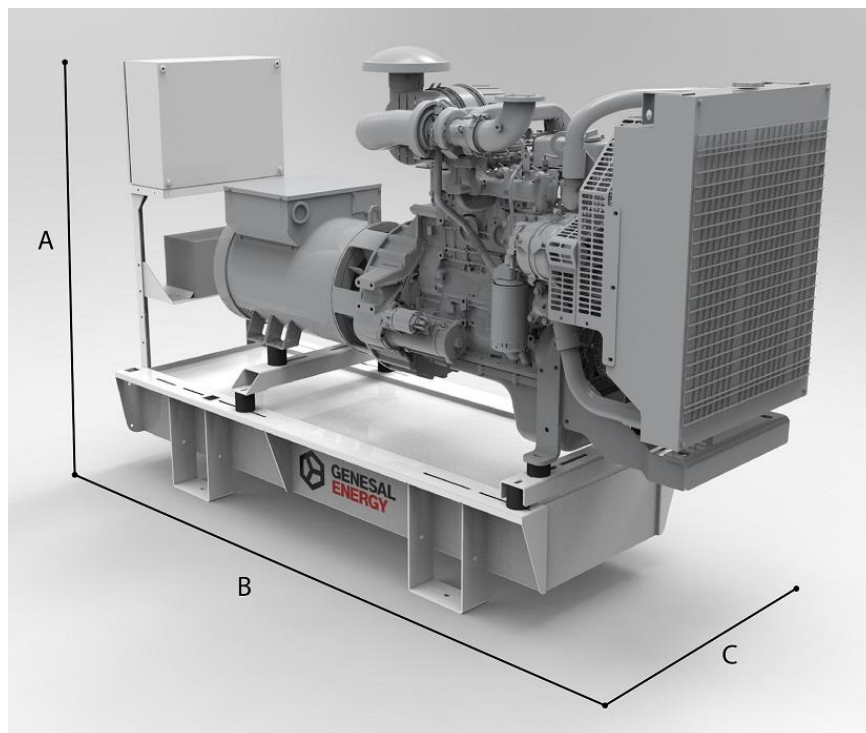
### Generating set overall dimensions

#### Open version

GEN22KA		
Height (A)	mm	1193
Length (B)	mm	1539
Width (C)	mm	750
Weight	kg	437

#### Optional components

- ⊗ Greater capacity tank.
- ⊗ Special-size base frame.
- ⊗ Compliance with earthquake regulations.
- ⊗ Colour to customer specification
- ⊗ Special treatments for aggressive environments.
- ⊗ Other (please contact us)



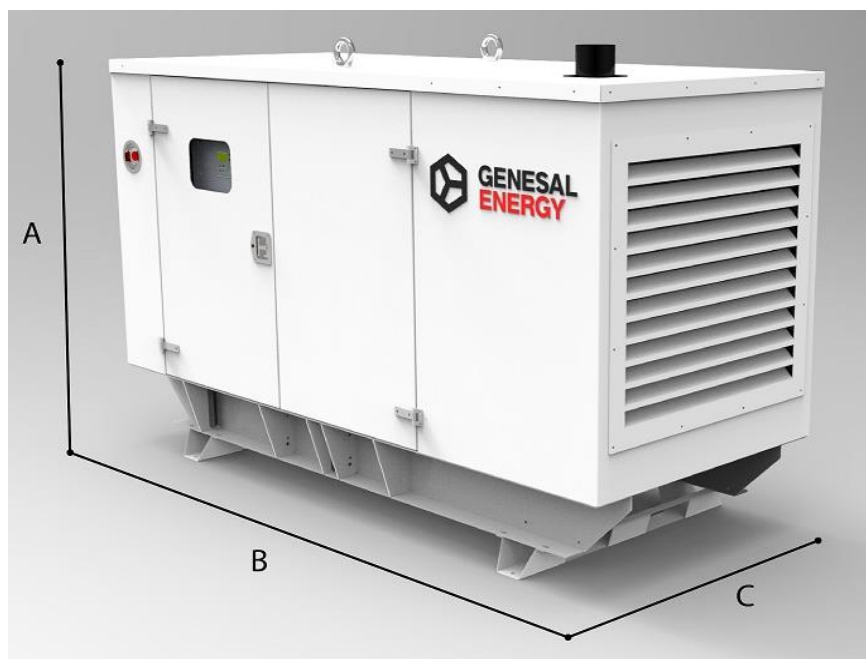
#### Soundproof version

Modular, soundproof canopy made of galvanised sheet steel. It has large, removable soundproof doors with sound-absorbing material so that access to the inside of the machine whether for inspection or maintenance purposes is easy. Locks (with single key) and stainless-steel hinges. It has been painted with a priming coat and a two-component acrylic-polyurethane finish. Sound power level in accordance with Directive 2005/88/EC of the European Union.

GEN22KI		
Height (A)	mm	1342
Length (B)	mm	1950
Width (C)	mm	830
Weight	kg	677

#### Optional components

- ⊗ Removable doors.
- ⊗ Upper air outlet.
- ⊗ Greater capacity tank.
- ⊗ Aluminium or stainless steel canopy
- ⊗ Colour to customer specification
- ⊗ Special treatments for aggressive environments.
- ⊗ Compliance with earthquake regulations.
- ⊗ Other (please contact us)



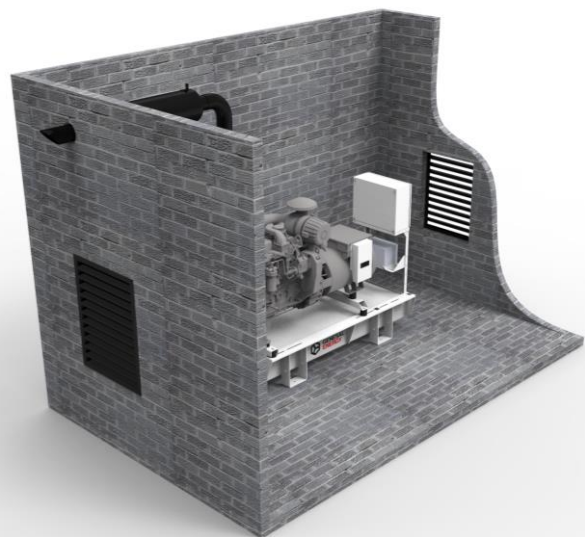
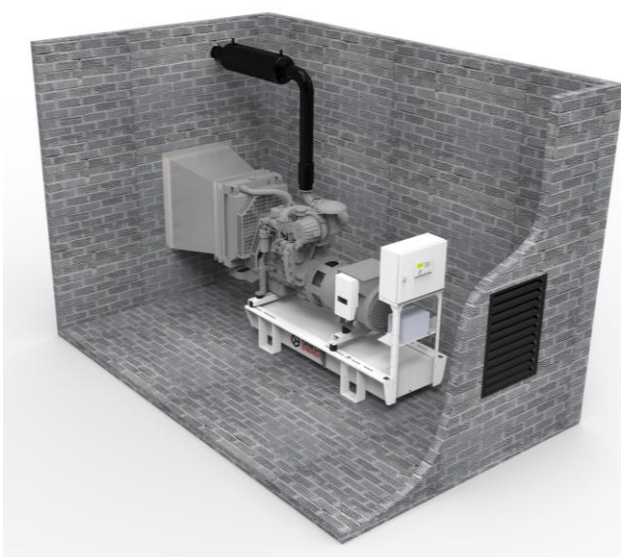
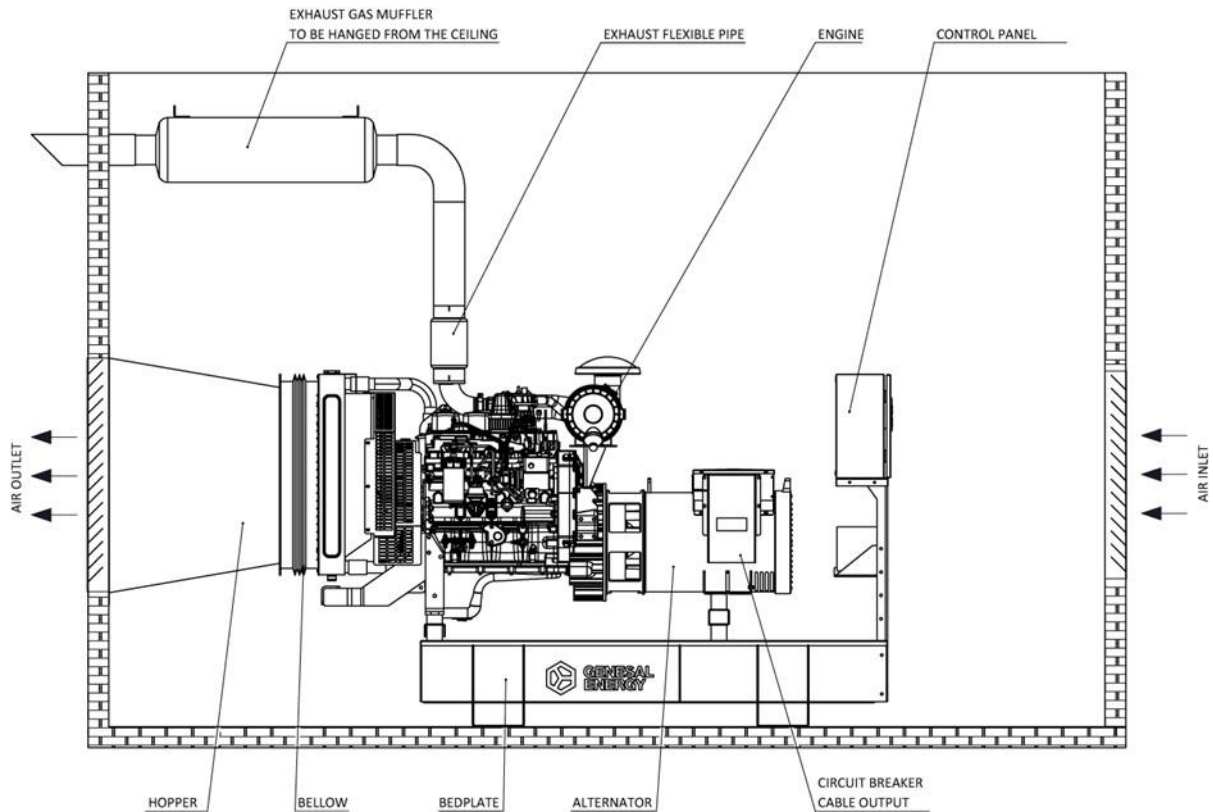
Dimensions and weight correspond to the standard version of the product.





**Recommended dimensions for the indoor installation of the open generating set**

Minimum room dimensions			Dimensions for ventilation and exhaust gases		
Length	mm	3539	Outlet louvers	m <sup>2</sup>	0,17
Width	mm	2750	Inlet louvers	m <sup>2</sup>	0,1
Height	mm	2193	Exhaust gas outlet	mm	60



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### Recommended dimensions for the indoor installation of the soundproof generating set

Minimum room dimensions			Dimensions for ventilation and exhaust gases		
Length	mm	2950	Outlet louvers	m <sup>2</sup>	0,3
Width	mm	2830	Inlet louvers	m <sup>2</sup>	0,1
Height	mm	2342	Exhaust gas outlet	mm	76

