Model: KM20U/KM22

KOHLER POWER SYSTEMS

200–480 V **Diesel**

ISO 9001 KOHLER POWER SYSTEMS NATIONALLY REGISTERED

Ratings Range

		KM20U 60 Hz	KM22 50 Hz
Standby:	**kW**	16.8–20	16–17.6
	kVA	21–25	20–22
Prime:	**kW**	15.3–18.2	14.5–16
	kVA	19.1–22.7	18.2–20

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- A one-year limited warranty covers all systems and components.
- Mitsubishi engine with 12-volt battery charging alternator.
- Single-bearing alternator with insulation class H.
- Unit-mounted radiator with 50°C (122°F) ambient air capability.
- Skid and vibration isolators.
- Subbase fuel tank, 100 L (26 gal.).
- Dry type air filter.
- Main line circuit breaker.
- Microprocessor controller.
- Battery, battery rack, and cables.
- Industrial 9 dB(A) reduction exhaust silencer (loose).
- Operation and installation literature.

Generator Set Ratings

Alternator	Voltage	Ph	Hz	Standby Rating kW/kVA	Standby Rating Amps	Prime Rating kW/kVA	Prime Rating Amps
LSA422S5 or ECO28-1L	120/208	3	60	18.4/23	64	16.7/20.9	58
	127/220	3	60	20/25	66	18.2/22.7	60
	115/230	3	60	16.8/21	53	15.3/19.1	48
	120/240	3	60	18.4/23	55	16.7/20.9	50
	254/440	3	60	20/25	33	18.2/22.7	30
	277/480	3	60	20/25	30	18.2/22.7	27
	115/200	3	50	17.6/22	64	16/20	58
	110/220	3	50	17.6/22	58	16/20	52
	127/220	3	50	16/20	53	14.5/18.2	48
	115/230	3	50	17.6/22	55	16/20	50
	120/240	3	50	17.6/22	53	16/20	48
	220/380	3	50	17.6/22	33	16/20	30
	230/400	3	50	17.6/22	32	16/20	29
	240/415	3	50	17.6/22	31	16/20	28

With Available Enclosure Accessory

RATINGS: All three-phase units are rated at 0.8 power factor. See TIB-109 for generator set derate tables.
Obtain the technical information bulletin (TIB-101) on ratings guidelines for the complete ratings definitions.
PRP: Prime power is available for an unlimited number of annual operating hours in variable load applications in accordance with ISO-8528/1.
A 10% overload capability is available for a period of 1 hour within a 12-hour period of operating in accordance with ISO-3046/1.
ESP: The emergency standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO-8528/1. Overload is not allowed.
The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Alternator Specifications

- NEMA-MG21, UTE NF C51.111, VDE 0530, BS 4999, CSA standards compliance for temperature rise and motor starting.
- Sustained short-circuit current greater than 300% of the rated current for up to 10 seconds.
- Self-ventilated and dripproof construction.
- Vacuum-impregnated windings with fungus-resistant epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Specifications LSA422S5	60 Hz	50 Hz
Ratings voltage	480 V	400 V
Standby rating @ 27°C, kVA	31.5	25.0
Prime rating @ 40°C, kVA	26.0	20.0
Efficiency @ full load, %	87.5	86.6
Air flow, m^3/min. (cfm)	10.8 (381)	9.0 (318)
Direct axis subtransient reactance (X"d), %	6.3	5.8

Specifications ECO28-1L	60 Hz	50 Hz
Ratings voltage	480 V	400 V
Standby rating @ 27°C, kVA	26.0	22.0
Prime rating @ 40°C, kVA	24.0	20.0
Efficiency @ full load, %	84.2	
Air flow, m^3/min. (cfm)	5.5 (194)	
Direct axis subtransient reactance (X"d), %	9.4	

Specifications LSA422S5/ECO28-1L	Alternator
Manufacturer	Leroy Somer/Mecc Alte
Type	4-Pole, Rotating-Field
Exciter type	Shunt/Brushless
Leads: quantity, type	12, Reconnectable
Voltage regulator	Solid State
Insulation:	NEMA MG1
Material	Class H
Bearing: quantity, type	1, Sealed
Coupling	Direct
Voltage regulation, no-load to full-load	±1%

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Mitsubishi	
Engine model	S4Q2.SD	
Engine type	4-Cycle, Naturally Aspirated	
Cylinder arrangement	4 Inline	
Displacement, L (cu. in.)	2.5 (153)	
Bore and stroke, mm (in.)	88 x 103 (3.5 x 4.1)	
Compression ratio	22.1:1	
Piston speed, m/min. (ft./min.)	371 (1218)	309 (1014)
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	28.7 (38)	23.9 (32)
Governor type	Mechanical	
Frequency regulation, no-load to full-load	ISO 5%	
Frequency regulation, steady state	±2.5%	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m^3/min. (cfm)	5.3 (189)	4.4 (157)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	600 (1112)	
Maximum allowable back pressure, kPa (in. Hg)	6.7 (2.0)	
Exhaust outlet size at engine hookup, mm (in.)	60.5 (2.38)	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Starter motor rated voltage (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Quantity, CCA rating each	One, 680	
Battery voltage (DC)	12	

Fuel

Fuel System	60 Hz	50 Hz
Max. fuel flow, Lph (gph)	36 (9.5)	
Fuel prime pump	Electric	
Recommended fuel	#2 Diesel	
Fuel tank capacity, L (gal.)	100 (26.4)	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	5.5 (6.0)	
Oil pan capacity with filter, L (qt.)	6.5 (6.8)	

Application Data

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50 (122)	
Radiator system capacity, including engine, L (gal.)	8.1 (2.1)	
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	23 (1308)	19 (1080)
Water pump type	Centrifugal	
Fan, kWm (HP)	1.2 (1.6)	0.8 (1.1)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.1 (0.4)	

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm) *	60 (2119)	48 (1695)
Combustion air, m^3/min. (cfm)	1.9 (72)	1.7 (61)

* Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption	60 Hz		50 Hz	
Diesel, Lph (gph) at % load	**Standby Rating**			
110% (of the standby rating)	8.1	(2.1)	6.8	(1.8)
Diesel, Lph (gph) at % load	**Prime Rating**			
100% (of the prime rating)	7.4	(2.0)	6.2	(1.6)
75% (of the prime rating)	5.6	(1.5)	4.7	(1.2)
50% (of the prime rating)	4.1	(1.1)	3.4	(0.9)

Controllers

Decision-Maker™ 1000

Automation

- Test LEDs
- Voltage and speed stabilization

Engine Parameters

- Engine speed indication (with LCD message)
- Battery voltage indication (with LCD message)
- Elapsed hour meter (with LCD message)
- Fuel solenoid control
- Starter control

Measurements

- Frequency, Hz (with LCD message)

Operation and/or Safety Lights

- Oil pressure fault
- Water temperature fault
- Fail to start fault
- Overspeed fault (≥60 kVA)
- Set ready for load
- Charging alternator fault
- General alarm
- General fault
- Panel lamp
- Emergency stop fault

Safety Devices

- Overspeed fault
- Automatic standby

Miscellaneous

- Fault reset
- Three-phase with or without neutral, two-phase, or single-phase use

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Available Accessories

Enclosed Unit

- ❑ Sound Enclosure M127, 60 Hz, 65.4 dB(A) @ 7 m (23 ft.), Standby (with enclosed critical silencer)
- ❑ Sound Enclosure M127, 50 Hz, 61 dB(A) @ 7 m (23 ft.), Standby (with enclosed critical silencer)

Open Unit

- ❑ Exhaust Silencer, Critical 40 dB(A) Reduction
- ❑ Exhaust Silencer, Residential 29 dB(A) Reduction
- ❑ Extension, 40 cm (16 in.)
- ❑ Flexible Exhaust Connector
- ❑ Protection Mesh

Cooling System

- ❑ Block Heater [recommended for ambient temperatures below 0°C (32°F)]
- ❑ Radiator Core Guard

Controller

Automation

- ❑ External Starting Order
- ❑ Plug Preheating
- ❑ Remote Start Capability
- ❑ Utility Sensing, 3-Phase

Engine Parameters

- ❑ Plug Preheating Control
- ❑ Water Preheating Control

Measurements

- ❑ Analog Indicator
- ❑ Line Voltages, Volts
- ❑ Phase Currents, Amps
- ❑ Single Voltages, Volts

Safety Devices

- ❑ Overload or Short-Circuit Fault
- ❑ Differential Triggering Fault

Miscellaneous

- ❑ Alarm Horn
- ❑ Battery Charger, 12 Volt
- ❑ Differential Protection with Time and Sensitivity Adjustment
- ❑ External ATS Position
- ❑ Permanent Insulation Controller

Fuel System

- ❑ Automatic Fuel Tank Fill Kit
- ❑ Subbase Fuel Tank with Secondary Containment Basin
- ❑ Subbase Fuel Tank Leak Alarm
- ❑ Water Separator Fuel Filter

Electrical System

- ❑ Battery Charger, Equalize/Float Type
- ❑ Battery Isolator Switch

Engine and Alternator

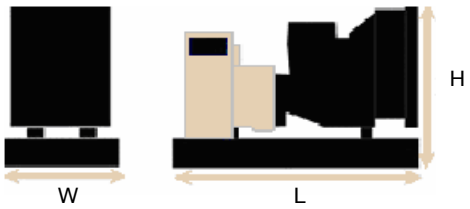
- ❑ Air Cleaner, Heavy-Duty (with air restriction indicator)
- ❑ Electronic Isochronous Governor
- ❑ Lube Oil Drain Pump

Miscellaneous Accessories

- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

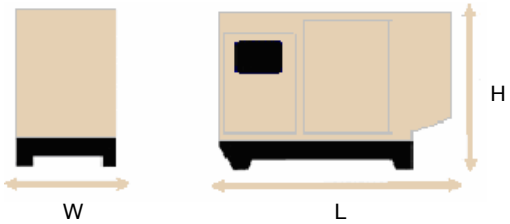
Dimensions and Weights

Open Model



Overall Size, L x W x H, mm (in.):	1700 x 896 x 1121 (67 x 35 x 44)
Weight, wet, kg (lb.):	660 (1455)

With Available Enclosure Accessory



Overall Size, L x W x H, mm (in.):	2080 x 960 x 1415 (82 x 38 x 56)
Weight, wet, kg (lb.):	890 (1962)

NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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