



MAKAWA POWER BY MITSUBISHI



MODEL: MKW-1600MSJ



MITSUBISHI Series Diesel Generator Sets

Stand by	kVA	1760
	kW	1408
Prime	kVA	1600
	kW	1280



Water Cooled



Modular type
sound-proof canopy



Easy maintenance



50 Hz



Remote control
system



Diesel



Warning system for
decreasing fuel with
electronic fuel level sender



3 phase

Standby Rating for a standby engine should be sized for a maximum of 70% average load factor and roughly 200 hours per year. Standby power ratings should never be applied except in true emergency outage situations. With standby rated generators there is no overload capability built into the units.

Prime Power is the maximum power accessible at the variable load for an unlimited number of hours per year in a variable load setting. It is not advisable that the variable load exceed 70% average of the prime power rating during any operational period. If the engine is running at 100% prime power, yearly hours should not exceed 500. Overload situations should be avoided however a 10% overload capability is available for a 1 hour period within a 12 hour cycle of operation.

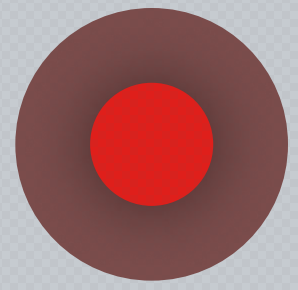
Continuous Power is used in applications where supplying power is at a constant 100% load for an unlimited number of hours each year. Continuous power rated units are most widely used in applications where the power grid is unreachable.

Meets standards ISO 8528/9727 when testing genset by a 3rd independent unit

ISO 9001:2015, ISO14001:2015

Makawa reserves the right to make changes in model, technical specifications, color, equipment & accessories without prior notice.

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ENGINE SPECIFICATIONS

- Flexible fuel pipe
- Oil discharge valve and extension pipe
- Industrial type silencer, exhaust spiral or compensator
- Engine block water heater (in automatic models)
- Diesel gen-set maintenance and operating instructions and electrical circuit diagram
- MITSUBISHI series heavy duty diesel engine
- 4 cycle, water cooling system, turbocharged aftercooler induction
- Electronic governor system
- 12/24 volt self-starter and charger alternator
- Changeable air, fuel and oil filter
- Maintenance free battery

MODEL	MITSUBISHI - S16R-PTA	
POWER	STAND BY (kW)	1590
	PRIME (kW)	1450
SPEED (rpm)	1500	
CYCLE	4	
DISPLACEMENT (lt)	65,37	
NUMBER OF CYLINDERS	16, V	
BORE AND STROKE (mm)	170 x 180	
COMPRESSION RATIO	14:1	

GOVERNOR TYPE	Mechanical/Electronic	
INDUCTION	TURBOCHARGED AFTERCOOLER	
COMBUSTION SYSTEM	DIRECT	
COOLING SYSTEM	WATER	
FUEL CONSUMPTION (lt/h)	100% OF PRIME POWER	350
	75% OF PRIME POWER	265
	50% OF PRIME POWER	178
TOTAL LUBRICATION SYSTEM CAPACITY (lt)	230	
TOTAL COOLANT CAPACITY (lt)	170	

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ALTERNATOR SPECIFICATIONS

- Stator 2/3 step for harmonic failure
- The alternator windings are protected by insulating varnish against oil and acid
- Brushless, single bearing, flexible disc 4 poles alternator for harmonic failure
- H type isolation class
- IP 21-23 protection class
- Self exciter
- Electronic automatic voltage regulator

BRAND	LEROY SOMER
MODEL	LSA 50.2 VL10
FREQUENCY (HZ)	50
SPEED (RPM)	1500
DESIGN	4 pole, brushless
CONNECTION TYPE	STAR
VOLTAGE (V)	400

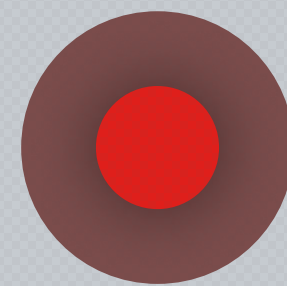
PHASE	3
Stand by (kVA)	1760
Prime (kVA)	1600
VOLTAGE REGULATION (+/-)	± 1%
INSULATION SYSTEM	Class H
PROTECTION	IP23
RATED POWER FACTOR	0.8

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FEATURE



GENSET CONTROLLERS DATAKOM/DEEPSEA

D300/D500



DSE7320



- Diesel and gas genset support
- 400Hz operation support
- 400 event logs, full snapshot
- All parameters front panel editable
- 3 level configuration password
- 128x64 graphical LCD display
- Downloadable languages
- Waveform display of V & I
- Harmonic analysis of V & I
- 16Amp MCB & GCB outputs
- 8 configurable digital inputs
- Inputs expandable to 40
- 6 configurable digital outputs
- Outputs expandable to 38
- 3 configurable analog inputs
- Both CANBUS-J1939 & MPU
- 3 configurable service alarms
- Multiple automatic exerciser
- Weekly operation schedule
- Dual mutual standby with equal aging of gensets
- Manual "speed fine adjust" on selected ECUs
- Automatic fuel pump control
- Disable protections feature
- Excess power protection
- Reverse power protection
- Overload IDMT protection
- Load shedding, dummy load
- Multiple load management
- Current unbalance protection
- Voltage unbalance protection
- Fuel filling & fuel theft alarms
- Battery back-up real time clock
- Idle speed control
- Battery charge run enabled
- Combat mode support
- Multiple nominal conditions
- Tactor & MCB drive
- 4 quadrant genset power counters
- Mains power counters
- Fuel filling counter
- Fuel consumption counter
- Modem diagnostics display
- Configurable through USB, RS-485 and GPRS
- Free configuration program
- Allows SMS controls
- Ready for central monitoring
- Mobile genset support
- Automatic GSM geo-location
- GPS connectivity (RS232)
- Easy USB firmware upgrade
- IP65 rating with standard gasket

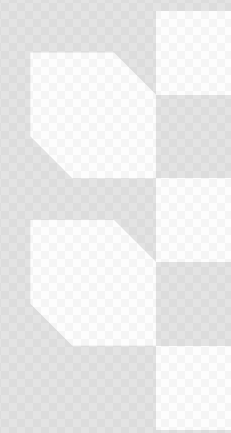
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GENSET CONTROLLERS MAKAWA/ DEEPSEA

MEASUREMENTS

- Mains & genset PN/PP voltages Mains & genset frequency
- Mains & genset phase currents Mains & genset neutral currents Mains & genset, phase & total, kW, kVA, kVA_r, pf
- Engine speed Battery voltage



**MAKAWA POWER
GENERATION BY MITSUBISHI
MODEL: MKW-1600MSJ**

COMMUNICATIONS

- 4-band GPRS modem (optional)
- USB Device
- RS-485 (2400-115200baud)
- RS-232 (2400-115200baud)
- J1939-CANBUS
- Geo-locating through GSM
- GPS support (RS-232)
- Internet Central Monitoring
- SMS message sending
- E-mail sending
- Free PC software: Rainbow Plus
- Modbus RTU

FUNCTIONALITIES

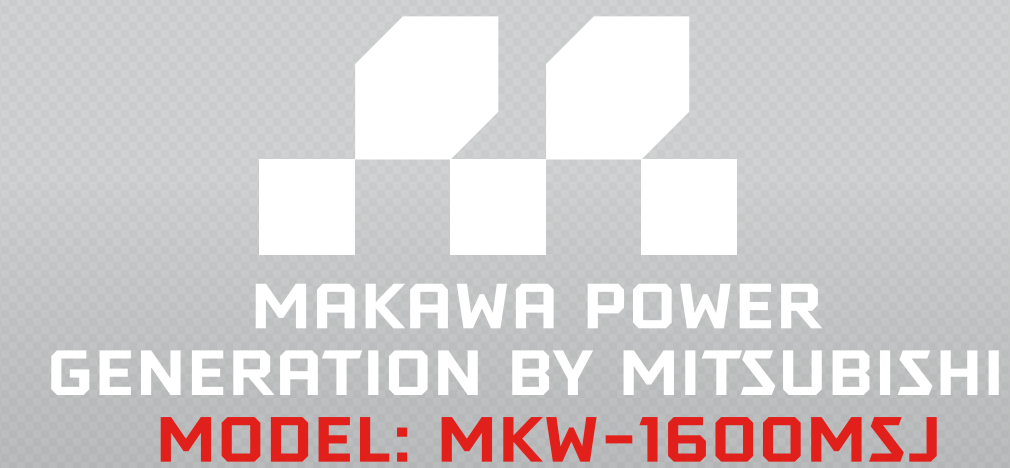
- AMF unit
- ATS unit
- Remote start controller
- Manual start controller
- Engine controller
- Remote display panel
- Harmonic analysis of V & I
- Internal battery (optional)

TOPOLOGIES

- 3 ph 4 w, star & delta
- 3 ph 3 w, 2 CTs
- 2 ph 3 w
- 1 phase 2 wires

OPTIONAL

OPTIONAL GENSET CONTROLLERS



Next generation single gen-set controllers for Stand-by and Primepower applications combining multi-functionality and wide communication with EFI engines.



DATAKOM SMART 200



DATAKOM D500



DATAKOM D500-GSM



DEEPSEA 6120



DEEPSEA 7320



COMAP AMF25

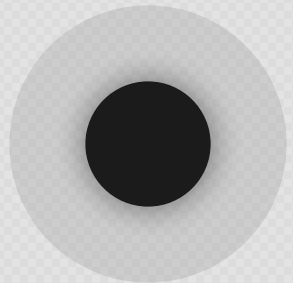
	Datakom SMART 200	Datakom SMART500-MK2	Datakom D500	Datakom D500-GSM	DEEPSEA 6120	DEEPSEA 7320	ComAp AMF25
AUTOMATIC MAINS MONITORING	✓	✓	✓	✓	✓	✓	✓
MANUEL START	✓	✓	✓	✓	✓	✓	✓
REMOTE START	✓	✓	✓	✓	✓	✓	✓
REMOTE MONITORING WITH SIM CARD	Optional	Optional	Optional	✓	✗	Optional	Optional
1 ADDITIONAL OPTION (HORN, OIL-FUEL HEATER ETC.)	✗	Optional	Optional	Optional	Optional	Optional	Optional
LIGHT WARNING AND MIMIC DIAGRAM	✓	✓	✓	✓	✓	✓	✓
BATTERY CHARGER	✓	✓	✓	✓	✓	✓	✓
RS-485 COMMUNICATION	Optional	Optional	✓	✓		✓	Optional
ETHERNET (TCP-IP) COMMUNICATION	✗	✓	✓	✓	✗	Optional	Optional



GENSET CONTROLLERS FOR SYNCHRONIZATION SYSTEMS

Next generation synchronizing genset controller capable of every communication and functionality.

OPTIONAL



DEEPSEA 8610



DEEPSEA 8620



DEEPSEA 8660

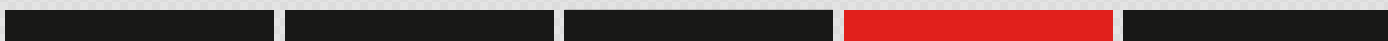


COMAP INTELIGEN
BASEBOX



COMAP INTELIGEN 200

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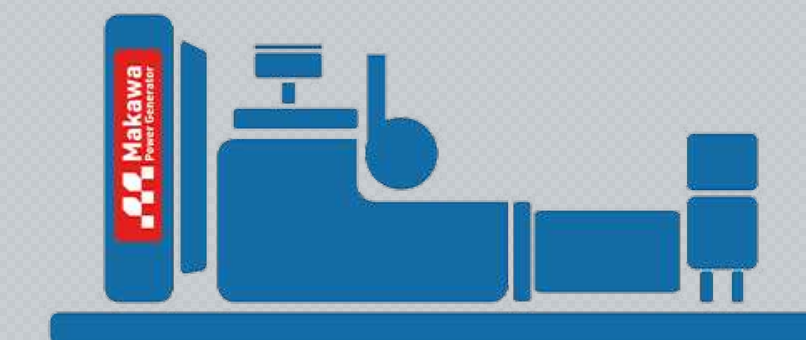
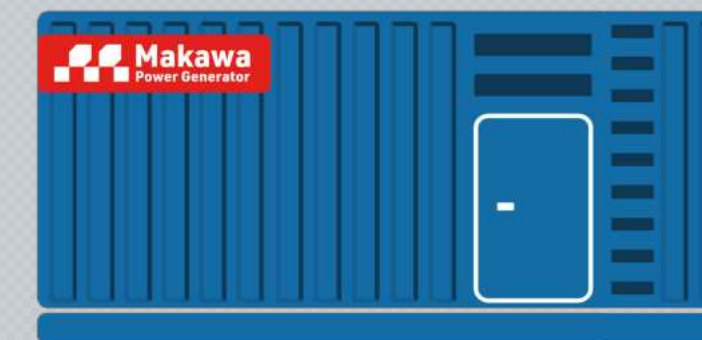
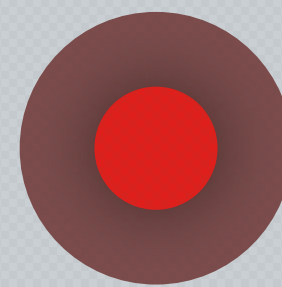


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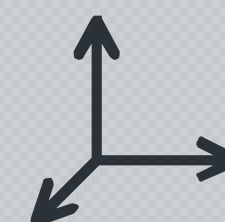
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CANOPY



- Modular type sound-proof canopy
 - Canopy installation executed with screw and nut, without welding process
 - Epoxy and polyester powder painted canopy
 - Weatherproof canopy rating is IP 23
 - Canopy designed for easy maintenance
-
- Lockable doors on both sides of canopy
 - Emergency stop button
 - Transparent panel inspection window
 - Insulation details: Non-flammable acoustic foam
 - Nano tech cleaning system
 - Container optional



Dimensions
(W x L x H) mm

2438*12.192*2896

2200*5470*2550



Weight
(Kg)

19.300

13.000



Fuel tank capacity
(lt)

N/A

N/A

SILENCER OPTIONS

- Standard industrial type
- Critical type
- Hospital type

CANOPY OPTIONS

- Standard canopy
- Super silent canopy
- Extra süper silent canoy (thicker insulation)

GEN-SET SAFETY PROTECTION & ALARMS

- High water temperature
- Low oil pressure
- High & low engine speed
- Low radiator water level
- Over current load
- High & low genset voltage
- Start/stop failure

OPTIONAL EQUIPMENTS

- Charge ammeter
- Moulded case circuit braker (in automatic models)
- Hospital/Critical type silencer
- Modular type sound-proof canopy
- Mobile - trailer
- Synchronization control panel for 2-16 gensets
- 3 pole/4 pole automatic transfer panel (A.T.S.)
- Fuel and oil heater
- Alternator heater
- Automatic fuel filling system
- Fuel-water seperator filter
- PMG warning system

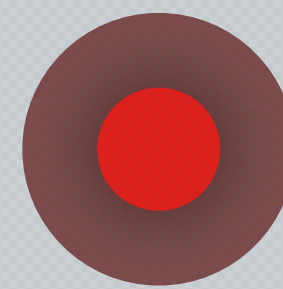
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CONTACT US



MAKAWA
TECHNOLOGY
EQUIPMENT CO., LTD.

Handico Tower, Pham Hung str, Nam
Tu Liem District, Hanoi, Vietnam
Tel: +84 985.898.950
Email: makawa68@gmail.com



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