

Ratings Range

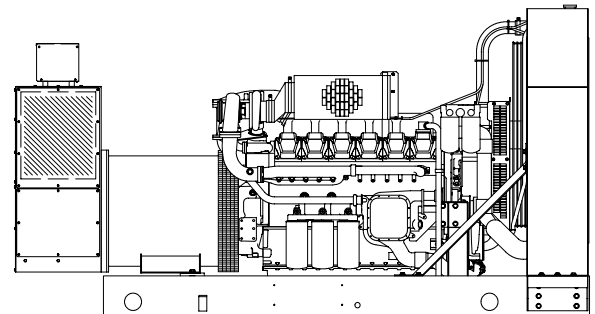
		60 Hz	50 Hz
Standby:	kW	525-615	480-540
	kVA	656-769	600-675
Prime:	kW	510-560	440-492
	kVA	638-700	550-615

Generator Ratings

Alternator	Voltage	Ph	Hz	150°C	130°C	125°C	105°C	
				Rise Standby Rating kW/kVA	Rise Standby Rating kW/kVA	Rise Prime Rating kW/kVA	Rise Prime Rating kW/kVA	
5M4028	120/208	3	60	535/669	525/656	525/656	510/638	
	127/220	3	60	560/700	560/700	545/681	535/669	
	139/240	3	60	600/750	560/700	545/681	535/669	
	240/416	3	60	535/669	525/656	525/656	510/638	
5M4030	277/480	3	60	600/750	560/700	545/681	535/669	
	120/208	3	60	600/750	565/706	545/681	525/656	
	127/220	3	60	600/750	590/738	545/681	545/681	
	139/240	3	60	605/756	600/750	550/688	545/681	
	240/416	3	60	600/750	565/706	545/681	525/656	
	277/480	3	60	605/756	600/750	550/688	545/681	
	110/190	3	50	512/640	488/610	480/600	448/560	
5M4032	115/200	3	50	508/635	488/610	480/600	448/560	
	120/208	3	50	500/625	480/600	464/580	440/550	
	220/380	3	50	512/640	488/610	480/600	448/560	
	230/400	3	50	508/635	488/610	480/600	448/560	
	240/416	3	50	500/625	480/600	464/580	440/550	
	120/208	3	60	605/756	605/756	550/688	550/688	
	127/220	3	60	610/763	610/763	555/694	555/694	
5M4164	139/240	3	60	610/763	610/763	555/694	555/694	
	220/380	3	60	595/744	595/744	540/675	540/675	
	240/416	3	60	605/756	605/756	550/688	550/688	
	277/480	3	60	610/763	610/763	555/694	555/694	
	110/190	3	50	540/675	540/675	492/615	492/615	
	115/200	3	50	540/675	540/675	492/615	492/615	
	120/208	3	50	540/675	540/675	492/615	492/615	
5M4272	220/380	3	50	540/675	540/675	492/615	492/615	
	230/400	3	50	540/675	540/675	492/615	492/615	
	240/416	3	50	540/675	540/675	492/615	492/615	
	5M4164	220/380	3	60	610/763	610/763	555/694	555/694
	5M4272	347/600	3	60	605/756	600/750	550/688	545/681
5M4276	347/600	3	60	615/769	615/769	560/700	560/700	

Standard Features

- Your DDC/MTU Power Generation product distributor provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set complies with ISO 8528-5, Class G3 requirements for transient performance.
- The generator set accepts rated load in one step.
- The 60 Hz generator set engine is certified by the Environmental Protection Agency (EPA).
- A one-year limited warranty covers all systems and components. Two-, five-, and ten-year extended warranties are also available.
- Generator features:
 - The brushless, rotating-field generator has broadrange reconnectability.
 - The pilot-excited, permanent-magnet generator (PMG) provides superior short-circuit capability.
- Other features:
 - Controllers are available for all applications. See controller features inside.
 - The low coolant level shutdown prevents overheating (standard on radiator models only).
 - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.
 - An electronic, isochronous governor delivers precise frequency regulation.
 - Electronic engine controls and a generator microprocessor controller combine to deliver one of the most advanced control systems in today's generator market.



600DSE-4, 60 Hz Model Shown

RATINGS: All three-phase units are rated at 0.8 power factor. *Standby Ratings:* Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. *Prime Power Ratings:* Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. Obtain the technical information bulletin (TIS-101) on ratings guidelines for the complete ratings definitions. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. GENERAL GUIDELINES FOR DERATION: *Altitude:* Derate 1.5% per 305 m (1000 ft.) elevation above 1006 m (3300 ft.). Maximum altitude capability is 3109 m (10200 ft.). *Temperature:* Derate 0.4% per 5.5°C (10°F) temperature above 25°C (77°F).

Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Permanent-Magnet Pilot Exciter
Voltage regulator	Solid-State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H, Synthetic, Nonhygroscopic
Temperature rise	130°C, 150°C Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Rotor balancing	125% 60 Hz, 150% 50 Hz
Voltage regulation, no-load to full-load (with < 0.5% drift due to temp. variation)	3-Phase Sensing, ±0.25%
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V 5M4028 (10 lead)	1800 (60 Hz)
480 V, 380 V 5M4030 (10 lead)	1775 (60 Hz), 1150 (50 Hz)
480 V, 380 V 5M4032 (10 lead)	2200 (60 Hz), 1375 (50 Hz)
380 V 5M4164 (4 lead)	2250 (60 Hz)
600 V 5M4272 (4 lead)	1750 (60 Hz)
600 V 5M4276 (4 lead)	2800 (60 Hz)

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the generator field.
- Self-ventilated and dripproof construction.
- Superior voltage waveform from two-thirds pitch windings and skewed stator.
- Digital solid-state, volts-per-hertz voltage regulator with ±0.25% no-load to full-load regulation.
- Brushless alternator with brushless pilot exciter for excellent load response.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Manufacturer	Detroit Diesel/MTU	
Engine: model	12V2000 G70 R123-7K35	12V2000 G60 R123-7K08
Engine: type	4-Cycle, Turbocharged, Intercooled	
Cylinder arrangement	12-V	
Displacement, L (cu. in.)	23.9 (1458)	
Bore and stroke, mm (in.)	130 (5.12) x 150 (5.91)	
Compression ratio	16.0:1	
Piston speed, m/min. (ft./min.)	540 (1772)	450 (1476)
Main bearings: quantity, type	7, Precision Half Shells	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	679 (910)	600 (804)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Valve (exhaust) material	Austenitic Steel	
Governor: type, make/model	DDEC Electronic Control	
Frequency regulation, no-load to-full load	Isochronous	
Frequency regulation, steady state	±0.25%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust flow at rated kW, m ³ /min. (cfm)	145 (5120)	109 (3830)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	424 (795)	477 (890)
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Exh. outlet size at eng. hookup, mm (in.)	See ADV drawing	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	24	
Ampere rating	70	
Starter motor rated voltage (DC)	24	
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating above 0°C (32°F)	2, 1000	
Qty., CCA rating below 0°C (32°F)	4, 700	
Battery voltage (DC)	12	

Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)	19 (0.75)	
Fuel return line, min. ID, mm (in.)	19 (0.75)	
Max. lift, engine-driven fuel pump, m (ft.)	2.1 (6.8)	
Max. fuel flow, Lph (gph)	1061 (280)	911 (241)
Max. fuel pump restriction with new filter, kPa (in. Hg)	20 (6)	
Max. fuel pump restriction with used filter, kPa (in. Hg)	41 (12)	
Fuel filter: quantity, type	2, Secondary	
Recommended fuel	#2 Diesel	

Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.)	69.0 (72.9)	
Oil pan capacity with filter, L (qt.)	94.1 (99.4)	
Oil filter: quantity, type	3, Cartridge	
Oil cooler	Water-Cooled	

Application Data

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)	50 (122)	
Engine jacket water capacity, L (gal.)	66 (17.5)	
Radiator system capacity, including engine, L (gal.)	159 (42)	178 (47)
Engine jacket water flow, Lpm (gpm)	1098 (290)	908 (240)
Charge cooler water flow, Lpm (gpm)	—	276 (73)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	439 (24395)	246 (14000)
Heat rejected to charge cooling water at rated kW, dry exhaust, kW (Btu/min.)	—	99 (5600)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	1118 (44)	
Fan, kWm (HP)	31 (42)	22 (30)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H ₂ O)	0.125 (0.5)	

Remote Radiator System*	60 Hz	50 Hz
Exhaust manifold type	Dry	
Connection sizes:		
Water inlet, mm (in.)	102 (4)	
Water outlet, mm (in.)	77 (3)	Two 77 (3)
Intercooler inlet/outlet, mm (in.)	—	44.5 (1.75)
Static head allowable above engine, kPa (ft. H ₂ O)	149 (50)	

* Contact your local distributor for cooling system options and specifications based on your specific requirements.

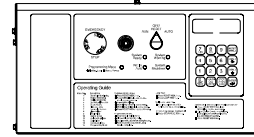
Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m ³ /min. (scfm)†	797 (28200)	518 (18300)
Cooling air required for generator set when equipped with city water cooling or remote radiator, based on 14°C (25°F) rise, m ³ /min. (scfm)†	493 (17400)	419 (14800)
Combustion air, m ³ /min. (cfm)	61 (2140)	42 (1480)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	93 (5270)	76 (4340)
Generator, kW (Btu/min.)	45 (2570)	41 (2310)

† Air density = 1.20 kg/m³ (0.075 lbf/ft³)

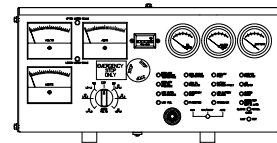
Fuel Consumption	60 Hz	50 Hz
Diesel, Lph (gph) at % load	Standby Rating	
100%	169.5(44.8)	139.5(36.8)
75%	122.4(32.3)	104.6(27.6)
50%	83.9(22.2)	71.7(18.9)
25%	47.5(12.6)	40.6(10.7)
Diesel, Lph (gph) at % load	Prime Rating	
100%	151.2(39.9)	126.4(33.4)
75%	110.9(29.3)	95.6(25.3)
50%	76.5(20.2)	65.6(17.3)
25%	44.2(11.7)	37.4 (9.9)

Controllers



Digital 550 Controller

Audiovisual annunciation with NFPA 110 Level 1 capability. Programmable microprocessor logic and digital display features. Safeguard circuit protection standard. 12- or 24-volt engine electrical system capability. Remote start, remote annunciation, and remote communication options. Refer to M6-46 for additional controller features and accessories.



Microprocessor-Plus, 16-Light Controller

Audiovisual annunciation with NFPA 110 Level 1 capability. Microprocessor logic, AC meters, and engine gauge features. 12- or 24-volt engine electrical system capability. Remote start, prime power, and remote annunciation options. Refer to M6-30 for additional controller features and accessories.

Standard Features and Accessories

Additional Standard Features

- Alternator Protection (standard with Digital 550)
- Oil Drain Extension
- Operation and Installation Literature
- Pilot-Excited, Permanent-Magnet Generator (PMG)

Accessories

Open Unit

- Exhaust Silencer Kits, Critical
50/60 Hz kits: PA-365348-SD, PA-365353-SD
50 Hz kits: PA-354880-SD, PA-365337-SD
60 Hz kits: PA-354894-SD, PA-365338-SD
- Exhaust Silencer Kits, Hospital
50/60 Hz kits: PA-365349-SD, PA-365354-SD
50 Hz kits: PA-354905-SD, PA-365343-SD
60 Hz kits: PA-354907-SD, PA-365344-SD
- Exhaust Silencer Kits, Industrial
50/60 Hz kits: PA-343617-SD, PA-365350-SD
50 Hz kits: PA-354904-SD, PA-365340-SD
60 Hz kits: PA-354909-SD, PA-365341-SD
- Exhaust Silencer Kits, Residential
50/60 Hz kits: PA-365347-SD, PA-365352-SD
50 Hz kits: PA-354882-SD, PA-365334-SD
60 Hz kits: PA-354892-SD, PA-365335-SD
- Flexible Exhaust Connector, Stainless Steel
- Sound Enclosure (with roof-mounted hospital silencer)
- Weather Enclosure (with roof-mounted critical silencer)

Cooling System

- Block Heater
- High Ambient Radiator
- Radiator Duct Flange
- Remote Radiator Cooling

Fuel System

- Flexible Fuel Lines
- Fuel Filter
- Fuel Pressure Gauge
- Subbase Fuel Tank with Day Tank

Electrical System

- Battery
- Battery Charger, Equalize/Float Type
- Battery Heater
- Battery Rack and Cables

Engine and Generator

- Air Cleaner, Heavy Duty
- Air Cleaner Restriction Indicator
- Bus Bar Kits (standard on 7M generators, 380-600 volt only)
- Generator Strip Heater
- Line Circuit Breaker (NEMA type 1 enclosure)
- Line Circuit Breaker with Shunt Trip (NEMA type 1 enclosure)
- NFPA 110 Literature
- Optional Generators
- Rated Power Factor Testing
- Safeguard Breaker (not available with Digital 550)

Paralleling System

- Load-Sharing Module
- Reactive Droop Compensator
- Remote Speed Adjust Potentiometer/Electronic Governor
- Voltage Adjust Potentiometer
- Voltage Regulator Relocation Kit

Maintenance

- General Maintenance Literature Kit
- Maintenance Kit (includes air, oil, and fuel filters)
- Overhaul Literature Kit
- Production Literature Kit

Controller

- Common Failure Relay Kit
- Communication Products and PC Software (Digital 550 controller only)
- Customer Connection Kit
- Dry Contact Kit (isolated alarm)
- Engine Prealarm Sender Kit
- Prime Power Switch (Digital 550 controller only)
- Remote Annunciator Panel
- Remote Audiovisual Alarm Panel
- Remote Emergency Stop Kit
- Remote Mounting Cable
- Run Relay Kit

Miscellaneous Accessories

- _____
- _____
- _____

Dimensions and Weights

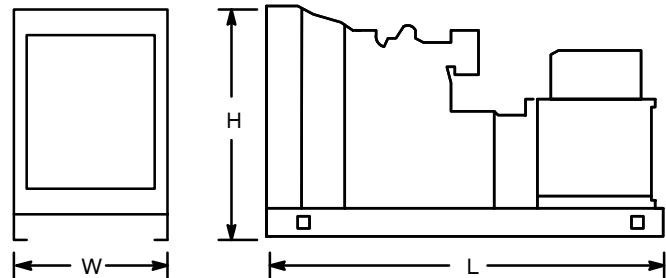
Overall Size, max., L x W x H, mm (in.):

60 Hz: 3812 x 1509 x 1971 (150.08 x 59.40 x 77.59)

50 Hz: 4018 x 1509 x 1983 (158.19 x 59.40 x 78.08)

Weight, radiator model, max. wet, kg (lb.): 60 Hz: 4750 (10472)

50 Hz: 4950 (10913)



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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