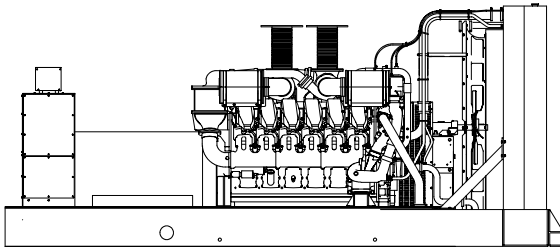




## Ratings Range

		60 Hz	50 Hz
<b>Standby:</b>	<b>kW</b>	1160-1500	1200-1320
	<b>kVA</b>	1450-1875	1500-1650
<b>Prime:</b>	<b>kW</b>	1050-1360	1088-1200
	<b>kVA</b>	1313-1700	1360-1500



## Standard Features

- Your Spectrum® 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.
- A UL-2200 listing is available on the 60 Hz generator set.
- At 60 Hz the generator set accepts rated load in one step.
- The generator set complies with ISO 8528-5, Class G3 requirements for transient performance.
- 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.
  - The generator set-to-skid mounting options are either integral vibration isolation or direct mounting with 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.

## Generator Ratings

Generator	Voltage	Ph	Hz	150°C Rise Standby Rating		130°C Rise Standby Rating		125°C Rise Prime Rating		105°C Rise Prime Rating	
				kW/kVA	Amps	kW/kVA	Amps	kW/kVA	Amps	kW/kVA	Amps
7M4050	220/380	3	60	1160/1450	2203	1160/1450	2203	1050/1313	1994	1050/1313	1994
	240/416	3	60	1410/1763	2446	1370/1713	2377	1280/1600	2221	1240/1550	2151
	277/480	3	60	1500/1875	2255	1500/1875	2255	1360/1700	2045	1360/1700	2045
	220/380	3	50	1248/1560	2370	1200/1500	2279	1136/1420	2157	1088/1360	2066
	230/400	3	50	1308/1635	2360	1248/1560	2252	1188/1485	2143	1136/1420	2050
	240/416	3	50	1308/1635	2269	1228/1535	2130	1188/1485	2061	1116/1395	1936
7M4052	220/380	3	60	1480/1850	2811	1480/1850	2811	1340/1675	2545	1340/1675	2545
	240/416	3	60	1500/1875	2602	1500/1875	2602	1360/1700	2359	1360/1700	2359
	277/480	3	60	1500/1875	2255	1500/1875	2255	1360/1700	2045	1360/1700	2045
	220/380	3	50	1320/1650	2507	1320/1650	2507	1200/1500	2279	1200/1500	2279
	230/400	3	50	1320/1650	2382	1320/1650	2382	1200/1500	2165	1200/1500	2165
	240/416	3	50	1320/1650	2290	1280/1600	2221	1200/1500	2082	1160/1450	2012
7M4174	220/380	3	60	1500/1875	2849	1500/1875	2849	1360/1700	2583	1360/1700	2583
7M4176	220/380	3	60	1500/1875	2849	1500/1875	2849	1360/1700	2583	1360/1700	2583
7M4290	347/600	3	60	1500/1875	1804	1500/1875	1804	1360/1700	1636	1360/1700	1636
7M4368	2400/4160	3	60	1500/1875	260	1500/1875	260	1360/1700	236	1360/1700	236
	1905/3300	3	50	1320/1650	289	1320/1650	289	1200/1500	262	1200/1500	262
7M4370	2400/4160	3	60	1500/1875	260	1500/1875	260	1360/1700	236	1360/1700	236
	1905/3300	3	50	1320/1650	289	1320/1650	289	1200/1500	262	1200/1500	262

**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 4572 m (15000 ft.) on 60 Hz and 6096 m (20000 ft.) on 50 Hz. **TEMPERATURE:** Derate 0.4% per 5.5°C (10°F) temperature above 25°C (77°F).

# Alternator Specifications

Specifications	Generator
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)	±0.25%
Unbalanced load capability	100% of Rated Standby Current
One-step load acceptance at 60 Hz	100% of Rating
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 416 V    7M4050 (4 bus bar) ..	4500 (60 Hz), 3600 (50 Hz)
480 V, 416 V    7M4052 (4 bus bar) ..	5500 (60 Hz), 4700 (50 Hz)
380 V            7M4174 (4 bus bar) ..	4200 (60 Hz)
380 V            7M4176 (4 bus bar) ..	5400 (60 Hz)
600 V            7M4290 (4 bus bar) ..	5700 (60 Hz)
4160 V, 3300 V    7M4368 (6 lead) .....	4900 (60 Hz), 2900 (50 Hz)
4160 V, 3300 V    7M4370 (6 lead) .....	5500 (60 Hz), 3000 (50 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	12V4000 (T123-7K36)	12V4000 (T123-7K16)
Engine: type	4-Cycle, Turbocharged, Intercooled	
Cylinder arrangement	12V	
Displacement, L (cu. in.)	49 (2975)	
Bore and stroke, mm (in.)	165 (6.5) x 190 (7.5)	
Compression ratio	13.7:1	
Piston speed, m/sec. (ft./min.)	11.4 (2244)	9.5 (1870)
Main bearings: quantity, type	—	
Rated rpm	1800	1500
Max. power at rated rpm, kWm (BHP)	1640 (2200)	1465 (1965)
Cylinder head material	Cast Iron	
Crankshaft material	Forged Steel	
Valve (exhaust) material	High Alloy 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 <sup>3</sup> /min. (cfm)	341 (12030)	269 (9490)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	450 (842)	520 (968)
Maximum allowable back pressure, kPa (in. Hg)	5.1 (1.5)	
Exhaust outlet size at engine hookup, mm (in.)	2 @ 254 (10)	

### 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)		Dual, 24
Battery, recommended cold cranking amps (CCA):		
Qty., CCA rating above 0°C (32°F)		4, 950
Qty., CCA rating below 0°C (32°F)		8, 1250
Battery voltage (DC)		12

### Fuel

Fuel System	60 Hz	50 Hz
Fuel supply line, min. ID, mm (in.)		25 (1.0)
Fuel return line, min. ID, mm (in.)		19 (0.75)
Max. lift, engine-driven fuel pump, m (ft.)		—
Max. fuel flow, Lph (gph)	942 (249)	888 (235)
Max. fuel pump restriction with new/used filter, kPa (in. Hg)		20 (6)/41 (12)
Fuel filter		2, Secondary
Recommended fuel		#2 Diesel

### Lubrication

Lubricating System	60 Hz	50 Hz
Type		Full Pressure
Oil pan capacity, L (qt.)		200 (211)
Oil pan capacity with filter, L (qt.)		220 (232)
Oil filter: quantity, type		4, Spin-On
Oil cooler		Water-Cooled

# Application Data

## Cooling (Standard Radiator)

Cooling System	60 Hz	50 Hz
Ambient temperature, °C (°F)	40 (105)	50 (122)
Engine jacket water capacity, L (gal.)	123 (32.5)	
Radiator system capacity, including engine, L (gal.)	455 (120)	
Engine jacket water flow, Lpm (gpm)	1416 (374)	1060 (280)
Charge cooler water flow, Lpm (gpm)	568 (150)	606 (160)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	565 (32120)	570 (32415)
Heat rejected to charge cooling water at rated kW, dry exhaust, and at innercooler coolant inlet temperature <57°C (135°F), kW (Btu/min.)	464 (26400)	328 (18668)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	1829 (72)	
Fan, kWm (HP)	60 (81)	63 (85)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H <sub>2</sub> O)	0.125 (0.5)	

## Cooling (Optional Systems)

Remote Radiator System*	60 Hz	50 Hz
Exhaust manifold type	Dry	
Connection sizes:	Class 150 ANSI Flange	
Water inlet, mm (in.)	191 (7.5) Bolt Circle	
Water outlet, mm (in.)	191 (7.5) Bolt Circle	
Intercooler inlet/outlet, mm (in.)	152 (6.0) Bolt Circle	
Static head allowable above engine, kPa (ft. H <sub>2</sub> O)	149 (50)	

City Water Cooling (CWC) System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Connection sizes:		
Water inlet, mm (in.)	*	
Water outlet, mm (in.)	*	

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

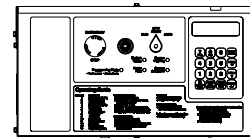
## Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m <sup>3</sup> /min. (scfm) <sup>†</sup>	1605 (56700)	1607 (56800)
Cooling air required for gen. set when equipped with CWC or remote radiator, based on 14°C (25°F) rise and ambient temp. of 29°C (85°F), m <sup>3</sup> /min. (cfm)	487 (17200)	456 (16100)
Combustion air, m <sup>3</sup> /min. (cfm)	137 (4824)	110 (3874)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	56 (3300)	52 (2948)
Generator, kW (Btu/min.)	74 (4208)	72 (4081)

<sup>†</sup> Air density = 1.20 kg/m<sup>3</sup> (0.075 lbm/ft<sup>3</sup>)

Fuel Consumption	60 Hz	50 Hz
<b>Diesel, Lph (gph) at % load</b>	<b>Standby Rating</b>	
100%	382.8(101.1)	339.0 (89.5)
75%	284.3 (75.1)	254.4 (67.1)
50%	215.8 (57.0)	174.0 (45.9)
25%	108.6 (28.7)	91.8 (24.2)
<b>Diesel, Lph (gph) at % load</b>	<b>Prime Rating</b>	
100%	346.0 (91.4)	307.8 (81.3)
75%	258.5 (68.3)	229.8 (60.7)
50%	177.2 (46.8)	157.2 (41.5)
25%	101.4 (26.8)	84.6 (22.3)

## Controllers



## Available 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.

### Microprocessor-Plus, 7-Light Controller

Audiovisual annunciation with NFPA 110 Level 2 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.

### Engine Gauge Box for Paralleling Switchgear

Generator set-to-switchgear interface for paralleling switchgear applications. Engine gauges and emergency stop switch features. 12- or 24-volt engine electrical system capability. Refer to M6-32 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, Critical  
60 Hz kits: PA-361601-SD, PA-361617-SD  
50 Hz kits: PA-361600-SD, PA-361618-SD
- Exhaust Silencer, Hospital  
Kits: PA-361602-SD, PA-361619-SD
- Exhaust Silencer, Industrial  
60 Hz kits: PA-361607-SD, PA-361623-SD  
50 Hz kits: PA-361606-SD, PA-361624-SD
- Exhaust Silencer, Residential  
60 Hz kits: PA-361605-SD, PA-361621-SD  
50 Hz kits: PA-361604-SD, PA-361622-SD
- Flexible Exhaust Connector, Stainless Steel

#### Cooling System

- Block Heater
- City Water Cooling
- Radiator Duct Flange
- Remote Radiator Cooling

#### Fuel System

- Day Tanks
- Flexible Fuel Lines
- Fuel Filter
- Fuel Pressure Gauge

#### 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)
- Integral Vibration Isolation Mounting
- Direct Mounting
- Spring Isolators

#### 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
- Overhaul Literature Kit

#### Controller (Digital 550 and Microprocessor-Plus)

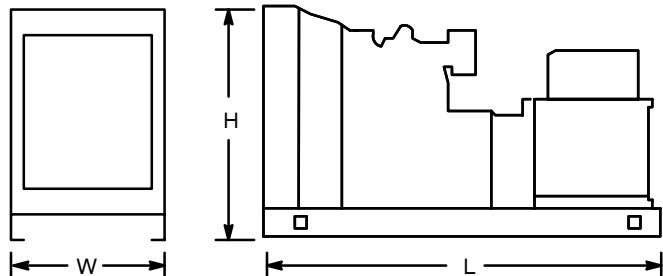
- Common Failure Relay Kit
- Communication Products and PC Software (Digital 550 controller only)
- Controller Cable, 12 m (40 ft.)
- Customer Connection Kit
- Dry Contact Kit (isolated alarm)
- Engine Prealarm Sender Kit
- Prime Power Switch
- Remote Annunciator Panel
- Remote Audiovisual Alarm Panel
- Remote Emergency Stop Kit
- Run Relay Kit

#### Miscellaneous Accessories

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Weights and Dimensions

Overall Size, L x W x H, mm (in.): 5801 x 2232 x 2515  
(228.37 x 87.88 x 99.00)  
Weight (radiator model), wet, kg (lb.): 13698 (30200)



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

### DISTRIBUTED BY: