



INDUSTRIAL DIESEL ENGINES & POWER GENERATORS FOR OVER 30 YEARS

List of Voltages & Frequencies (Hz) Around the World

This chart includes information on voltages and frequencies found across the globe. Each country is listed with the volts and frequency (also referred as Hertz or Hz and is referring to cycles per second) commonly found in each geographic area. There are approximately 40 countries that use 60 Hz while the rest typically run on 50 Hz current. Single-phase power is primarily for residential use (such as homeowners and what you would find in a hotel) while 3-phase electric power provides more stable, heavy-duty power for most industrial applications like manufacturing plants, commercial facilities, data centers, telecom towers, hospitals, food processing centers and utility power plants.

Some applications use specialized high voltages (such as 4160 V or 13,400 V) but these are on a more unique basis and typically involve transformers so those are not included. When considering a backup power generator, keep in mind that the frequency can often be changed by an accomplished power generation technician or electrical contractor but you do typically see a performance loss on most generator sets when you convert from 60 hertz to 50 hertz. This is mainly because you have to slow the engine RPM down and make adjustments so the overall kW or kVA output will be lower. The opposite is also true - you can sometimes gain kW when you convert from 50 Hz to 60 Hz because you speed the engine RPM up.

The number of wires and plugs used varies greatly by region since each country is developing and evolving their electrical grids at a different rate and over time so these are only provided as a good starting point and general guide.

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Abu Dhabi	230 V	400 V	50 Hz	3, 4	G
Afghanistan	220 V	380 V	50 Hz	4	C/F
Albania	230 V	400 V	50 Hz	4	C/F
Algeria	230 V	400 V	50 Hz	4	C/F
American Samoa	120 V	208 V	60 Hz	3, 4	A/B/F/I
Andorra	230 V	400 V	50 Hz	3, 4	C/F
Angola	220 V	380 V	50 Hz	4	C/F

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Anguilla	110 V	120/208 V / 127/220 V / 240/415 V	60 Hz	3, 4	A/B
Antigua and Barbuda	230 V	400 V	60 Hz	3, 4	A/B
Argentina	220 V	380 V	50 Hz	3, 4	C/I
Armenia	230 V	400 V	50 Hz	4	C/F
Aruba	120 V	220 V	60 Hz	3, 4	A/B/F/I
Australia	230 V	400 V	50 Hz	3, 4	I
Austria	230 V	400 V	50 Hz	3, 4	C/F
Azerbaijan	220 V	380 V	50 Hz	4	C/F
Azores	230 V	400 V	50 Hz	3, 4	B/C/F
Bahamas	120 V	208 V	60 Hz	3, 4	A/B
Bahrain	230 V	400 V	50 Hz	3, 4	G
Balearic Islands	230 V	400 V	50 Hz	3, 4	C/F
Bangladesh	220 V	380 V	50 Hz	3, 4	A/C/D/G/K
Barbados	115 V	200 V	50 Hz	3, 4	A/B
Belarus	220 V	380 V	50 Hz	4	C/F
Belgium	230 V	400 V	50 Hz	3, 4	C/E
Belize	110 V / 220 V	190 V / 380 V	60 Hz	3, 4	A/B/G
Benin	220 V	380 V	50 Hz	4	C/E
Bermuda	120 V	208 V	60 Hz	3, 4	A/B
Bhutan	230 V	400 V	50 Hz	4	C/D/G
Bolivia	230 V	400 V	50 Hz	4	A/C
Bonaire	127 V	220 V	50 Hz	3, 4	A/C
Bosnia & Herzegovina	230 V	400 V	50 Hz	4	C/F

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Botswana	230 V	400 V	50 Hz	4	D/G
Brazil	127 V / 220 V	220 V / 380 V	60 Hz	3, 4	C/N
British Virgin Islands	110 V	190 V	60 Hz	3, 4	A/B
Brunei	240 V	415 V	50 Hz	4	G
Bulgaria	230 V	400 V	50 Hz	4	C/F
Burkina Faso	220 V	380 V	50 Hz	4	C/E
Burma (officially Myanmar)	230 V	400 V	50 Hz	4	A/C/D/G/I
Burundi	220 V	380 V	50 Hz	4	C/E
Cambodia	230 V	400 V	50 Hz	4	A/C/G
Cameroon	220 V	380 V	50 Hz	4	C/E
Canada	120 V	120/208 V / 240 V / 480 V / 347/600 V	60 Hz	3, 4	A/B
Canary Islands	230 V	400 V	50 Hz	3, 4	C/E/F
Cape Verde	230 V	400 V	50 Hz	3, 4	C/F
Cayman Islands	120 V	240 V	60 Hz	3	A/B
Central African Republic	220 V	380 V	50 Hz	4	C/E
Chad	220 V	380 V	50 Hz	4	C/D/E/F
Channel Islands (Guernsey & Jersey)	230 V	415 V	50 Hz	4	C/G
Chile	220 V	380 V	50 Hz	3, 4	C/L
China, People's Republic of	220 V	380 V	50 Hz	3, 4	A/C/I
Colombia	110 V	220 V / 440 V	60 Hz	3, 4	A/B
Comoros	220 V	380 V	50 Hz	4	C/E

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
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Congo, Democratic Republic of	220 V	380 V	50 Hz	3, 4	C/D/E
Congo, People's Republic of	230 V	400 V	50 Hz	3, 4	C/E
Cook Islands	240 V	415 V	50 Hz	3, 4	I
Costa Rica	120 V	240 V	60 Hz	3, 4	A/B
Côte d'Ivoire (Ivory Coast)	220 V	380 V	50 Hz	3, 4	C/E
Croatia	230 V	400 V	50 Hz	4	C/E
Cuba	110 V / 220 V	190 V	60 Hz	3	A/B/C/L
Curaçao	127 V	220 V / 380 V	50 Hz	3, 4	A/B
Cyprus	230 V	400 V	50 Hz	4	G
Czech Republic	230 V	400 V	50 Hz	3, 4	C/E
Denmark	230 V	400 V	50 Hz	3, 4	C/E/F/K
Djibouti	220 V	380 V	50 Hz	4	C/E
Dominica	230 V	400 V	50 Hz	4	D/G
Dominican Republic	120 V	120/208 V / 277/480 V	60 Hz	3, 4	A/B
Dubai	230 V	400 V	50 Hz	3, 4	G
East Timor (Timor-Leste)	220 V	380 V	50 Hz	4	C/E/F/I
Ecuador	120 V	208 V	60 Hz	3, 4	A/B
Egypt	220 V	380 V	50 Hz	3, 4	C/F
El Salvador	120 V	200 V	60 Hz	3	A/B
England	230 V	415 V	50 Hz	4	G
Equatorial Guinea	220 V	[unavailable]	[unavailable]	[unavailable]	C/E
Eritrea	230 V	400 V	50 Hz	4	C/L

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Estonia	230 V	400 V	50 Hz	4	C/F
Ethiopia	220 V	380 V	50 Hz	4	C/F
Faeroe Islands	230 V	400 V	50 Hz	3, 4	C/E/F/K
Falkland Islands	240 V	415 V	50 Hz	4	G
Fiji	240 V	415 V	50 Hz	3, 4	I
Finland	230 V	400 V	50 Hz	3, 4	C/F
France	230 V	400 V	50 Hz	4	C/E
French Guiana	220 V	380 V	50 Hz	3, 4	C/D/E
Gabon (Gabonese Republic)	220 V	380 V	50 Hz	4	C
Gambia	230 V	400 V	50 Hz	4	G
Gaza	230 V	400 V	50 Hz	4	C/H
Georgia	220 V	380 V	50 Hz	4	C/F
Germany	230 V	400 V	50 Hz	4	C/F
Ghana	230 V	400 V	50 Hz	3, 4	D/G
Gibraltar	230 V	400 V	50 Hz	4	G
Great Britain (GB)	230 V	415 V	50 Hz	4	G
Greece	230 V	400 V	50 Hz	4	C/F
Greenland	230 V	400 V	50 Hz	3, 4	C/E/F/K
Grenada	230 V	400 V	50 Hz	4	G
Guadeloupe	230 V	400 V	50 Hz	3, 4	C/E
Guam	110 V	190 V	60 Hz	3, 4	A/B
Guatemala	120 V	208 V	60 Hz	3, 4	A/B
Guinea	220 V	380 V	50 Hz	3, 4	C/F/K
Guinea-Bissau	220 V	380 V	50 Hz	3, 4	C

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
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Guyana	120 V / 240 V	190 V	60 Hz	3, 4	A/B/D/G
Haiti	110 V	190 V	60 Hz	3, 4	A/B
Holland (officially the Netherlands)	230 V	400 V	50 Hz	3, 4	C/F
Honduras	120 V	208 V / 230 V / 240 V / 460 V / 480 V	60 Hz	3, 4	A/B
Hong Kong	220 V	380 V	50 Hz	3, 4	G
Hungary	230 V	400 V	50 Hz	3, 4	C/F
Iceland	230 V	400 V	50 Hz	3, 4	C/F
India	230 V	400 V	50 Hz	4	C/D/M
Indonesia	230 V	400 V	50 Hz	4	C/F
Iran	230 V	400 V	50 Hz	3, 4	C/F
Iraq	230 V	400 V	50 Hz	4	C/D/G
Ireland (Eire)	230 V	415 V	50 Hz	4	G
Ireland, Northern	230 V	415 V	50 Hz	4	G
Isle of Man	230 V	415 V	50 Hz	4	C/G
Israel	230 V	400 V	50 Hz	4	C/H
Italy	230 V	400 V	50 Hz	4	C/F/L
Jamaica	110 V	190 V	50 Hz	3, 4	A/B
Japan	100 V	200 V	50 / 60 Hz	3	A/B
Jordan	230 V	400 V	50 Hz	3, 4	C/D/F/G/J
Kazakhstan	220 V	380 V	50 Hz	3, 4	C/F
Kenya	240 V	415 V	50 Hz	4	G
Kiribati	240 V	[unavailable]	[unavailable]	[unavailable]	I
Korea, North	220 V	380 V	50 Hz	3, 4	C

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Korea, South	220 V	380 V	60 Hz	4	C/F
Kosovo	230 V	230 V / 400 V	50 Hz	3	C/F
Kuwait	240 V	415 V	50 Hz	4	G
Kyrgyzstan	220 V	380 V	50 Hz	3, 4	C/F
Laos	230 V	400 V	50 Hz	4	A/B/C/E/F
Latvia	230 V	400 V	50 Hz	4	C/F
Lebanon	230 V	400 V	50 Hz	4	C/D/G
Lesotho	220 V	380 V	50 Hz	4	M
Liberia	120 V	208 V	60 Hz	3, 4	A/B
Libya	230 V	400 V	50 Hz	4	C/L
Liechtenstein	230 V	400 V	50 Hz	4	C/J
Lithuania	230 V	400 V	50 Hz	4	C/F
Luxembourg	230 V	400 V	50 Hz	4	C/F
Macau	220 V	380 V	50 Hz	3	G
Macedonia	230 V	400 V	50 Hz	4	C/F
Madagascar	220 V	380 V	50 Hz	3, 4	C/E
Madeira	230 V	400 V	50 Hz	3, 4	C/F
Malawi	230 V	400 V	50 Hz	3, 4	G
Malaysia	240 V	415 V	50 Hz	4	G
Maldives	230 V	400 V	50 Hz	4	C/D/G/J/K/L
Mali	220 V	380 V	50 Hz	3, 4	C/E
Malta	230 V	400 V	50 Hz	4	G
Marshall Islands	120 V	[unavailable]	[unavailable]	[unavailable]	A/B
Martinique	220 V	380 V	50 Hz	3, 4	C/D/E
Mauritania	220 V	220 V	50 Hz	3, 4	C

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Mauritius	230 V	400 V	50 Hz	4	C/G
Mayotte	230 V	[unavailable]	[unavailable]	[unavailable]	C/E
Mexico	127 V	220 V / 480 V	60 Hz	3, 4	A/B
Micronesia, Federated States of	120 V	[unavailable]	[unavailable]	[unavailable]	A/B
Moldova	230 V	400 V	50 Hz	4	C/F
Monaco	230 V	400 V	50 Hz	4	C/E/F
Mongolia	230 V	400 V	50 Hz	4	C/E
Montenegro	230 V	400 V	50 Hz	3, 4	C/F
Montserrat	230 V	400 V	60 Hz	4	A/B
Morocco	220 V	380 V	50 Hz	4	C/E
Mozambique	220 V	380 V	50 Hz	4	C/F/M
Myanmar (formerly Burma)	230 V	400 V	50 Hz	4	A/C/D/G/I
Namibia	220 V	380 V	50 Hz	4	D/M
Nauru	240 V	415 V	50 Hz	4	I
Nepal	230 V	400 V	50 Hz	4	C/D/M
Netherlands	230 V	400 V	50 Hz	3, 4	C/F
New Caledonia	220 V	380 V	50 Hz	3, 4	C/F
New Zealand	230 V	400 V	50 Hz	3, 4	I
Nicaragua	120 V	208 V	60 Hz	3, 4	A/B
Niger	220 V	380 V	50 Hz	4	C/D/E/F
Nigeria	230 V	415 V	50 Hz	4	D/G
Northern Ireland	230 V	415 V	50 Hz	4	G
North Korea	220 V	380 V	50 Hz	3, 4	C
Norway	230 V	230 V / 400 V	50 Hz	3, 4	C/F

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Oman	240 V	415 V	50 Hz	4	G
Pakistan	230 V	400 V	50 Hz	3	C/D
Palau	120 V	208 V	60 Hz	3	A/B
Panama	120 V	240 V	60 Hz	3	A/B
Papua New Guinea	240 V	415 V	50 Hz	4	I
Paraguay	220 V	380 V	50 Hz	4	C
Peru	220 V	220 V	60 Hz	3	A/C
Philippines	220 V	380 V	60 Hz	3	A/B/C
Pitcairn Islands	230 V	[unavailable]	[unavailable]	[unavailable]	I
Poland	230 V	400 V	50 Hz	4	C/E
Portugal	230 V	400 V	50 Hz	3, 4	C/F
Puerto Rico	120 V	480 V	60 Hz	3, 4	A/B
Qatar	240 V	415 V	50 Hz	3, 4	G
Réunion	230 V	400 V	50 Hz	4	C/E
Romania	230 V	400 V	50 Hz	4	C/F
Russia (officially the Russian Federation)	220 V	380 V	50 Hz	4	C/F
Rwanda	230 V	400 V	50 Hz	4	C/J
Saba	110 V	[unavailable]	[unavailable]	[unavailable]	A/B
Saint Barthélemy (informally also referred to as Saint Barth's or Saint Barts)	230 V	[unavailable]	[unavailable]	[unavailable]	C/E
Saint Kitts and Nevis (officially the Federation of Saint Christopher and Nevis)	230 V	400 V	60 Hz	4	D/G

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
Saint Lucia	230 V	400 V	50 Hz	4	G
Saint Martin	220 V	[unavailable]	[unavailable]	[unavailable]	C/E
Saint Helena	230 V	[unavailable]	[unavailable]	[unavailable]	G
Sint Eustatius	110 V / 220 V	220 V	60 Hz	3, 4	A/B/C/F
Sint Maarten	110 V	220 V	60 Hz	3, 4	A/B
Saint Vincent and the Grenadines	110 V / 230 V	400 V	50 Hz	4	A/B/G
Samoa	230 V	400 V	50 Hz	3, 4	I
San Marino	230 V	400 V	50 Hz	4	C/F/L
São Tomé and Príncipe	230 V	400 V	50 Hz	3, 4	C/F
Saudi Arabia	230 V	400 V	60 Hz	4	G
Scotland	230 V	415 V	50 Hz	4	G
Senegal	230 V	400 V	50 Hz	3, 4	C/D/E/K
Serbia	230 V	400 V	50 Hz	3, 4	C/F
Seychelles	240 V	240 V	50 Hz	3	G
Sierra Leone	230 V	400 V	50 Hz	4	D/G
Singapore	230 V	400 V	50 Hz	4	G
Slovakia	230 V	400 V	50 Hz	4	C/E
Slovenia	230 V	400 V	50 Hz	3, 4	C/F
Solomon Islands	230 V	[unavailable]	[unavailable]	[unavailable]	G/I
Somalia	220 V	380 V	50 Hz	3, 4	C
Somaliland	220 V	380 V	50 Hz	3, 4	C
South Africa	230 V	400 V	50 Hz	3, 4	C/D/M/N
South Korea	220 V	380 V	60 Hz	4	C/F

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
South Sudan	230 V	400 V	50 Hz	4	C/D
Spain	230 V	400 V	50 Hz	3, 4	C/F
Sri Lanka	230 V	400 V	50 Hz	4	D/G
Sudan	230 V	400 V	50 Hz	4	C/D
Suriname	127 V / 230 V	220 V / 400 V	60 Hz	3, 4	A/B/C/F
Swaziland	230 V	400 V	50 Hz	4	M
Sweden	230 V	400 V	50 Hz	3, 4	C/F
Switzerland	230 V	400 V	50 Hz	3, 4	C/J
Syria	220 V	380 V	50 Hz	3	C/E/L
Tahiti	220 V	380 V	50 / 60 Hz	3, 4	C/E
Taiwan	110 V	220 V	60 Hz	4	A/B
Tajikistan	220 V	380 V	50 Hz	3	C/F
Tanzania	230 V	415 V	50 Hz	3, 4	D/G
Thailand	230 V	400 V	50 Hz	3, 4	A/B/C/O
Togo	220 V	380 V	50 Hz	4	C
Tonga	240 V	415 V	50 Hz	3, 4	I
Trinidad & Tobago	115 V	115/230 V / 230/400 V	60 Hz	4	A/B
Tunisia	230 V	400 V	50 Hz	4	C/E
Turkey	230 V	400 V	50 Hz	3, 4	C/F
Turkmenistan	220 V	380 V	50 Hz	3	C/F
Turks and Caicos Islands	120 V	240 V	60 Hz	4	A/B
Uganda	240 V	415 V	50 Hz	4	G
Ukraine	230 V	400 V	50 Hz	4	C/F

Country	Single-Phase Voltage (Volts)	Three-Phase Voltage (Volts)	Frequency (Hertz)	# of wires (not including ground wire)	Plug Type
United Arab Emirates (UAE)	230 V	400 V	50 Hz	3, 4	G
United Kingdom (UK)	230 V	415 V	50 Hz	4	G
United States of America (USA)	120 V	120/208 V / 277/480 V / 120/240 V / 240 V / 480 V	60 Hz	3, 4	A/B
United States Virgin Islands	110 V	190 V	60 Hz	3, 4	A/B
Uruguay	220 V	380 V	50 Hz	3	C/F/L
Uzbekistan	220 V	380 V	50 Hz	4	C/F
Vanuatu	230 V	400 V	50 Hz	3, 4	I
Venezuela	120 V	120 V	60 Hz	3, 4	A/B
Vietnam	220 V	380 V	50 Hz	4	A/C/D
Virgin Islands (British)	110 V	190 V	60 Hz	3, 4	A/B
Virgin Islands (USA)	110 V	190 V	60 Hz	3, 4	A/B
Wales	230 V	415 V	50 Hz	4	G
Yemen	230 V	400 V	50 Hz	4	A/D/G
Zambia	230 V	400 V	50 Hz	4	C/D/G
Zimbabwe	240 V	415 V	50 Hz	3, 4	D/G

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