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File # FTB-004	Title: International Input Voltages & Frequencies	
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One of the challenges we face in designing transformers and adapters for the international markets is the wide variety of line voltages and frequencies used throughout the world. Knowing the intended market(s) for our transformers in the design phase is critical. The chart below is a partial list of countries and their line voltages and frequencies.

Country	Freq. Hz	Voltage(s)	Country	Freq. Hz	Voltage(s)
Argentina	50	220 /380/440	Mexico	60	127 /220
Australia	50	240 /415/440	Morocco	50	115/127/200/ 220 /380
Austria ²	50	220-230 /380	Netherlands ²	50	220-230 /380
Bahamas	60	120 /208/240	New Zealand	50	230 /400
Belgium ²	50	127/ 220-230 /380	Nicaragua	60	120 /240
Bermuda	60	115-120 /208/230	Niger	50	220 /380
Bolivia	50/60 ¹	110-115 / 220 /380	Norway ²	50	220-230
Brazil	50/60 ¹	110-120 /127/ 220 /380/440	Panama	60	110-120 /220/240
Burma (Myanmar)	50	120/208/ 230 /380/440	Paraguay	50	220
Canada	60	120 /240/347	Peru	50/60 ¹	110/220 ¹
China	50	220 /380	Philippines	60	115 /220
Chile	50	220 /380	Poland	50	220 /380
Columbia	60	110-120 /220	Portugal ²	50	220-230 /380
Costa Rica	60	120 /240	Puerto Rico	60	120 /240
Cuba	60	120	Russia	50	220
Denmark ²	50	220-230 /380	Saudi Arabia	50/60 ¹	127/220 /380/400
Dominican Republic	60	110 /220	Scotland	50	220 /380
Ecuador	60	120 /127/208/220	Singapore	50	230 /400
Egypt	50	110/ 220 /380	South Africa	50 /DC	220-250 /380/400
Fiji	50	240 /415	Spain ²	50	127/ 220-230 /380
Finland ²	50	220-230 /380	Sweden ²	50	127/ 220-230 /380
France ²	50	127/ 220-230 /380	Switzerland ²	50	220-230 /380
Germany ²	50	220-230 /380	Syria	50	115/200/ 220 /380
Greece ²	50	220-230 /380	Tahiti	60	127/ 220
Guatemala	60	110-120 /220/240	Taiwan	60	110 /220
Haiti	50/ 60	110-120 /220/380	Thailand	50	220-230 /380
Honduras	60	110 /220	Turkey	50	220 /380
Hong Kong	50 /60	200 /346	United Kingdom	50	240 /415
India	50 /DC	220-250 /400	United States	60	110-120 /208/220-240/277/480
Ireland	50	220 /380	Uruguay	50	220
Israel	50	230 /400	Venezuela	60	120 /240
Italy ²	50	127/ 220-230 /380	Vietnam	50	120 /127/ 220 /380
Jamaica	50	110 /220	Virgin Islands	60	120 /240
Japan	50/60 ¹	100 /200	Western Samoa	50	230 /400
Korea	60	100 /200	Zaire	50	220 /380

Items in **bold** type indicate the most common single-phase voltages and frequencies in the given country.

¹ Where multiple voltages and/or frequencies are listed, but none are in bold type, they are about equally widespread in that country.

² Members of the European Union are slowly migrating toward a 230V standard and have temporarily adopted a 220-230V compromise.