

Electrical Formulas



kVA/kW Amperage Chart Heating kW Chart

Electrical Formulas

To Obtain:	Legend	Single Phase AC	Three Phase AC
Kilowatts	V = volts, I = amperes, pf = power factor	$\frac{V \times I \times pf}{1000}$	$\frac{1.732 \times V \times I \times pf}{1000}$
kVA	V = volts, I = amperes	$\frac{V \times I}{1000}$	$\frac{1.732 \times V \times I}{1000}$
HP required when generator kW is unknown (if generator efficiency is unknown, use 0.93)	kW = kilowatts	$\frac{kW}{0.746 \times \text{Efficiency (Generator)}}$	$\frac{kW}{0.746 \times \text{Efficiency (Generator)}}$
kW input when the motor HP is known (if motor efficiency is unknown, use 0.85 x HP)	HP = horsepower	$\frac{HP \times 0.746}{\text{Efficiency (Motor)}}$	$\frac{HP \times 0.746}{\text{Efficiency (Motor)}}$
Amperes when motor HP is known	HP = horsepower, V = volts, pf = power factor	$\frac{HP \times 0.746}{V \times pf \times \text{Efficiency}}$	$\frac{HP \times 0.746}{1.732 \times V \times pf \times \text{Efficiency}}$
Amperes when kW is known	kW = kilowatts, V = volts, pf = power factor	$\frac{kW \times 1000}{V \times pf}$	$\frac{kW \times 1000}{1.732 \times V \times pf}$
Amperes when kVA is known	kVA = kilovolts-amperes, V = volts	$\frac{kVA \times 1000}{V}$	$\frac{kVA \times 1000}{1.732 \times V}$

kVA/kW Amperage Chart (0.8 Power Factor)

kVA	kW	Voltages											
		208	220	240	380	400	440	450	480	600	2400	3300	4160
6.3	5	17.5	16.5	15.2	9.6	9.1	8.3	8.1	7.6	6.1	—	—	—
9.4	7.5	26.1	24.7	22.6	14.3	13.6	12.3	12	11.3	9.1	—	—	—
12.5	10	34.7	33	30.1	19.2	18.2	16.6	16.2	15.1	12	—	—	—
18.7	15	52	49.5	45	28.8	27.3	24.9	24.4	22.5	18	—	—	—
25	20	69.5	66	60.2	38.4	36.4	33.2	32.4	30.1	24	6	4.4	3.5
31.3	25	87	82.5	75.5	48	45.5	41.5	40.5	37.8	30	7.5	5.5	4.4
37.5	30	104	99	90.3	57.6	54.6	49.8	48.7	45.2	36	9.1	6.6	5.2
50	40	139	132	120	77	73	66.5	65	60	48	12.1	8.8	7
62.5	50	173	165	152	96	91	83	81	76	61	15.1	10.9	8.7
75	60	208	198	181	115	109	99.6	97.5	91	72	18.1	13.1	10.5
93.8	75	261	247	226	143	136	123	120	113	90	22.6	16.4	13
100	80	278	264	240	154	146	133	130	120	96	24.1	17.6	13.9
125	100	347	330	301	192	182	166	162	150	120	30	21.8	17.5
156	125	433	413	375	240	228	208	204	188	150	38	27.3	22
187	150	520	495	450	288	273	249	244	225	180	45	33	26
219	175	608	577	527	335	318	289	283	264	211	53	38	31
250	200	694	660	601	384	364	332	324	301	241	60	44	35
312	250	866	825	751	480	455	415	405	376	300	75	55	43
375	300	1040	990	903	576	546	498	487	451	361	90	66	52
438	350	1220	1155	1053	672	637	581	568	527	422	105	77	61
500	400	1390	1320	1203	770	730	665	650	602	481	120	88	69
625	500	1735	1650	1504	960	910	830	810	752	602	150	109	87
750	600	2080	1980	1803	1150	1090	996	975	902	721	180	131	104
875	700	2430	2310	2104	1344	1274	1162	1136	1052	842	210	153	121
1000	800	2780	2640	2405	1540	1460	1330	1300	1203	962	241	176	139
1125	900	3120	2970	2709	1730	1640	1495	1460	1354	1082	271	197	156
1250	1000	3470	3300	3009	1920	1820	1660	1620	1504	1202	301	218	174
1563	1250	4350	4130	3765	2400	2280	2080	2040	1885	1503	376	273	218
1875	1500	5205	4950	4520	2880	2730	2490	2440	2260	1805	452	327	261
2188	1750	—	—	5280	3350	3180	2890	3830	2640	2106	528	380	304
2500	2000	—	—	6020	3840	3640	3320	3240	3015	2405	602	436	348
2812	2250	—	—	6780	4320	4095	3735	3645	3400	2710	678	491	392
3725	2500	—	—	7520	4800	4560	4160	4080	3765	3005	752	546	435
3750	3000	—	—	9040	5760	5460	4980	4880	4525	3610	904	654	522
4375	3500	—	—	10550	6700	6360	5780	5660	5285	4220	1055	760	610
5000	4000	—	—	12040	7680	7280	6640	6480	6035	4810	1204	872	695

Heating kW Chart for Temporary Structures and Tents

Temporary Structure Area m ² (ft. ²)	Ambient Temperature at -18°C (0°F)			Ambient Temperature at -1-4°C (30-40°F)		
	Temporary Structure Wall Height, m (ft.)					
	2.43 (8)	3.04 (10)	3.96 (13)	2.43 (8)	3.04 (10)	3.96 (13)
Heating kW			Heating kW			
1858 (20000)	560	585	621	336	351	373
1765 (19000)	534	557	593	320	334	356
1672 (18000)	507	530	565	304	318	339
1579 (17000)	481	503	536	289	302	322
1486 (16000)	454	476	508	272	286	305
1394 (15000)	428	449	479	257	269	287
1301 (14000)	401	421	451	241	243	271
1208 (13000)	375	394	423	225	236	254
1115 (12000)	349	367	394	209	220	236
1022 (11000)	323	340	366	194	204	220
929 (10000)	296	313	337	178	188	202
836 (9000)	270	286	309	162	172	185
743 (8000)	244	258	281	146	155	169
650 (7000)	215	231	252	130	139	151
557 (6000)	191	204	224	115	122	134
465 (5000)	165	177	195	99	106	117
372 (4000)	138	150	167	83	90	100
279 (3000)	107	116	130	64	70	78
186 (2000)	75	83	94	45	50	56
93 (1000)	46	52	60	28	31	36

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