PYROTENAX MI CABLE CHARACTERISTICS

DIMENSIONAL CHARACTERISTICS

TABLE 1 CONDUCTOR DIMENSIONS (NOMINAL)

AWG/kcmil	18	16	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	350	500
Dia. (in)	0.040	0.051	0.064	0.081	0.102	0.128	0.162	0.204	0.229	0.258	0.289	0.325	0.365	0.410	0.460	0.500	0.590	0.707
Dia. (mm)	1.02	1.30	1.63	2.06	2.59	3.25	4.11	5.18	5.82	6.55	7.34	8.26	9.27	10.41	11.68	12.70	14.99	17.96
Area (kcmil)	1.62	2.58	4.11	6.53	10.38	16.51	26.25	41.74	52.63	66.37	83.69	105.50	133.10	167.80	211.60	250	350	500
Area (sq mm)	0.81	1.32	2.08	3.32	5.27	8.30	13.30	21.09	26.57	33.73	42.32	53.52	67.51	85.18	107.22	126.68	176.38	253.28

TABLE 2 MINIMUM SHEATH THICKNESS (SYSTEM 1850 MI CABLE)

	Single conductor 600 V		Two conductor 600 V		Three conductor 600 V		Four conductor 600 V		Seven conductor 600 V	
AWG/kcmil	in	mm	in	mm	in	mm	in	mm	in	mm
16	0.016	0.41	0.023	0.58	0.023	0.58	0.024	0.61	0.027	0.69
14	0.017	0.43	0.026	0.66	0.026	0.66	0.026	0.66	0.028	0.71
12	0.018	0.46	0.026	0.66	0.027	0.69	0.027	0.69	0.028	0.71
10	0.019	0.48	0.027	0.69	0.028	0.71	0.028	0.71	0.031	0.79
8	0.020	0.51	0.027	0.69	0.028	0.71	0.030	0.76	0.036	0.91
6	0.022	0.56	0.030	0.76	0.031	0.79	0.034	0.86		
4	0.024	0.61	0.034	0.86	0.036	0.91				
3	0.026	0.66	0.038	0.97	0.038	0.97				
2	0.027	0.69	0.042	1.07						
1	0.028	0.71	0.046	1.17						
1/0	0.028	0.71								
2/0	0.030	0.76								
3/0	0.032	0.81								
4/0	0.035	0.89								
250	0.037	0.94								
350	0.039	0.99								
500	0.041	1.04								

TABLE 3 INSULATION THICKNESS (NOMINAL) (BETWEEN CONDUCTORS AND BETWEEN CONDUCTORS AND SHEATH)

	in	mm
System 1850 600 V cables	0.061	1.55

MECHANICAL CHARACTERISTICS

TABLE 4 CABLE TENSILE STRENGTH (SYSTEM 1850 MI CABLE)

	Single conductor 600 V		Two conductor 600 V		Three conductor 600 V		Four conductor 600 V		Seven conductor 600 V	
AWG/kcmil	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg
16	320	145	670	304	740	336	865	392	1,180	535
14	376	171	815	370	920	417	1,010	458	1,495	678
12	460	209	970	440	1,170	531	1,340	608	1,880	853
10	595	270	1,260	572	1,480	671	1,790	812	2,660	1,207
8	685	311	1,600	726	1,950	885	2,420	1,098		
6	1,047	475	2,200	998	2,800	1,270	3,540	1,606		
4	1,480	671	3,130	1,420	4,050	1,837				
3	1,775	805								
2	2,105	955								
1	2,520	1,143								
1/0	3,075	1,395								
2/0	3,760	1,705								
3/0	4,560	2,068								
4/0	5,620	2,549								
250	6,560	2,976								
350	8,800	3,992								
500	12,000	5,443								

Note: Values are calculated assuming an ultimate tensile strength of 22,000 psi for copper. Maximum pulling load should not exceed 35% of these values.

TABLE 5 TERMINATION PERFORMANCE

Code-compliant bonding path from the cable sheath.

Hydrostatic withstand pressure up to 500 lbs/in2 (35 kg/cm2) when torqued to 25 ft-lbs.

ELECTRICAL CHARACTERISTICS (CURRENT RATING AND TERMINATION SIZE)

TABLE 6 CURRENT RATING (90°C RATING)

AWG/ kcmil	Single conductor			Two conductor			Three conductor			Four conductor			Seven conductor		
	CEC	NEC	Gland	CEC	NEC	Gland	CEC	NEC	Gland	CEC	NEC	Gland	CEC	NEC	Gland
16	—	24	1/2"	—	18	1/2"	—	18	1/2"	—	18/14	1/2"	—	14/13	3/4"
14	35	35	1/2"	25	25	1/2"	25	25	1/2"	25/20	25/20	3/4"	20/18	20/18	3/4"
12	40	40	1/2"	30	30	1/2"	30	30	3/4"	30/24	30/24	3/4"	24/21	24/21	3/4"
10	55	55	1/2"	40	40	3/4"	40	40	3/4"	40/32	40/32	3/4"	32/28	32/28	1"
8	80	80	1/2"	55	55	3/4"	55	55	3/4"	55/44	55/44	3/4"	44/39	44/39	1-1/4"
6	105	105	1/2"	75	75	3/4"	75	75	3/4"	75/60	75/60	1-1/4"			
4	140	140	1/2"	95	95	1"	95	95	1-1/4"						
3	165	165	3/4"	115	115	1-1/4"	115	115	1-1/4"						
2	190	190	3/4"	130	130	1-1/4"									
1	220	220	3/4"	145	145	1-1/4"									
1/0	260	260	3/4"												
2/0	300	300	3/4"												
3/0	350	350	3/4"												
4/0	405	405	1"												
250	455	455	1-1/4"												
350	570	570	1-1/4"												
500	700	700	1-1/4"												

Note:

1. Current ratings are based on 30°C (86°F) ambient. For ambients in excess of 30°C (86°F), refer to electrical codes for the derating factors.
2. In the case of four and seven conductor cables, the higher current rating applies if one conductor is used as a neutral.
3. For 14 AWG, 12 AWG 10 AWG, refer to appropriate sections of NEC and CEC governing conductor overcurrent protection limitations.

TABLE 7 CURRENT RATING (75°C RATING)

AWG/ kcmil	Single conductor			Two conductor			Three conductor			Four conductor			Seven conductor		
	CEC	NEC	Gland	CEC	NEC	Gland	CEC	NEC	Gland	CEC	NEC	Gland	CEC	NEC	Gland
16	—	—	1/2"	—	—	1/2"	—	—	1/2"	—	—	1/2"	—	—	3/4"
14	30	30	1/2"	20	20	1/2"	20	20	1/2"	20/16	20/16	3/4"	16/14	16/14	3/4"
12	35	35	1/2"	25	25	1/2"	25	25	3/4"	25/20	25/20	3/4"	20/18	20/18	3/4"
10	50	50	1/2"	35	35	3/4"	35	35	3/4"	35/28	35/28	3/4"	28/25	28/25	1"
8	70	70	1/2"	50	50	3/4"	50	50	3/4"	50/40	50/40	3/4"	40/35	40/35	1-1/4"
6	95	95	1/2"	65	65	3/4"	65	65	3/4"	65/52	65/52	1-1/4"			
4	125	125	1/2"	85	85	1"	85	85	1-1/4"						
3	145	145	3/4"	100	100	1-1/4"	100	100	1-1/4"						
2	170	170	3/4"	115	115	1-1/4"									
1	195	195	3/4"	130	130	1-1/4"									
1/0	230	230	3/4"												
2/0	265	265	3/4"												
3/0	310	310	3/4"												
4/0	360	360	1"												
250	405	405	1-1/4"												
350	505	505	1-1/4"												
500	620	620	1-1/4"												

Note:

1. Current ratings are based on 30°C (86°F) ambient. For ambients in excess of 30°C (86°F), refer to electrical codes for the derating factors.
2. In the case of four and seven conductor cables, the higher current rating applies if one conductor is used as a neutral.
3. For 14 AWG, 12 AWG 10 AWG, refer to appropriate sections of NEC and CEC governing conductor overcurrent protection limitations.

TABLE 8 CONDUCTOR RESISTANCE (OHMS/1000 FT) AT 25°C (77°F)

AWG/kcmil	18	16	14	12	10	8	6	4	3	2	1	1/0	2/0	3/0	4/0	250	350	500
Nominal DC resistance	6.51	4.09	2.58	1.62	1.02	0.641	0.403	0.253	0.201	0.159	0.126	0.100	0.079	0.063	0.050	0.042	0.030	0.021
Maximum DC resistance	7.05	4.25	2.73	1.72	1.08	0.680	0.427	0.269	0.213	0.169	0.134	0.106	0.084	0.067	0.052	0.045	0.032	0.022

Temperature Coefficient of Resistance

The resistance of copper conductors will increase with temperature in accordance with the following formula:

R_T = R [1+.0039 (T-25)] R = resistance at 25°C

R_T = resistance at new temperature T = new temperature (°C)

TABLE 9 NOMINAL CAPACITANCE AND INDUCTANCE (SYSTEM 1850 MI CABLE)

	Capacitance (µF/1000 ft)		Inductance (µH/1000 ft)	
	Single conductor	Multiconductor	Single conductor	Multiconductor
AWG/kcmil	600 V	600 V	600 V	600 V
16	0.055	0.043	90	103
14	0.064	0.049	80	99
12	0.076	0.058	70	91
10	0.082	0.067	66	86
8	0.101	0.079	56	81
6	0.119	0.095	50	77
4	0.128	0.101	47	73
3	0.130	0.102	47	67
2	0.167	0.108	40	65
1	0.173	0.107	39	65
1/0	0.211		35	
2/0	0.205		35	
3/0	0.232		33	
4/0	0.272		30	
250	0.268		31	
350	0.283		30	
500	0.281		30	

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