

## A.2 CAIDAS DE TENSION EN MEDIA TENSION

### A.2.1 CAIDA DE TENSION - MT. "Escenario 1 (Circuitos1, 2 y 3)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 1</b>													
CR	1	CT-2	2	240	332	43	126,066	1,8035	0,0120	CR	1	14.961,6695	0,2555
CT-2	2	CT-1	3	240	332	134,6	95,886	4,2938	0,0286	CT-2	2	14.959,8660	0,2676
CT-1	3	CT-3	4	240	332	198,5	83,637	5,5233	0,0368	CT-1	3	14.955,5722	0,2962
CT-3	4	CT-10	5	240	332	128,15	55,516	2,3669	0,0158	CT-3	4	14.950,0489	0,3330
CT-10	5	CT-4	6	240	332	108,35	26,943	0,9712	0,0065	CT-10	5	14.947,6820	0,3488
CT-4	6	CT-5	7	240	332	59	0,000	0,0000	0,0000	CT-4	6	14.946,7108	0,3553
CT-5	7	CT-11	8	240	332	65,05	-22,188	-0,4802	-0,0032	CT-5	7	14.986,2608	0,0916
CT-11	8	CT-12	9	240	332	58,5	-52,754	-1,0267	-0,0068	CT-11	8	14.986,7410	0,0884
CT-12	9	CT-19	10	240	332	76,35	-79,561	-2,0209	-0,0135	CT-12	9	14.987,7678	0,0815
CT-19	10	CT-18	11	240	332	84,75	-115,901	-3,2679	-0,0218	CT-19	10	14.989,7887	0,0681
CT-18	11	ETD	12	240	332	140,3	-148,755	-6,9434	-0,0463	CT-18	11	14.993,0566	0,0463
ETD	12	CR	1	240	332	483,1	238,487	38,3305	0,2555	ETD	12	15.000,0000	0,0000
<b>CIRCUITO 2</b>													
ETD	1	CT-17	2	240	332	37,3	161,999	2,0103	0,0134	ETD	1	15.000,0000	0,0000
CT-17	2	CT-9	3	240	332	135,1	132,360	5,9492	0,0397	CT-17	2	14.997,9897	0,0134
CT-9	3	CT-16	4	240	332	72,3	94,323	2,2688	0,0151	CT-9	3	14.992,0405	0,0531
CT-16	4	CT-8	5	240	332	136,2	67,018	3,0368	0,0202	CT-16	4	14.989,7717	0,0682
CT-8	5	CT-15	6	240	332	102,55	30,792	1,0505	0,0070	CT-8	5	14.986,7349	0,0884
CT-15	6	CT-14	7	240	332	150,15	0,000	0,0000	0,0000	CT-15	6	14.985,6844	0,0954
CT-14	7	CT-13	8	240	332	118,5	-31,652	-1,2479	-0,0083	CT-14	7	14.947,4817	0,3501
CT-13	8	CT-6	9	240	332	79,35	-66,187	-1,7473	-0,0116	CT-13	8	14.948,7295	0,3418
CT-6	9	CT-7	10	240	332	143	-84,164	-4,0041	-0,0267	CT-6	9	14.950,4768	0,3302
CT-7	10	CR	11	240	332	192,2	-112,421	-7,1886	-0,0479	CT-7	10	14.954,4809	0,3035
CR	11	ETD	1	240	332	483,1	-238,487	-38,3305	-0,2555	CR	11	14.961,6695	0,2555

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 3</b>													
ETD	1	CT-24	2	240	332	461,05	154,182	23,6497	0,1577	ETD	1	15.000,0000	0,0000
CT-24	2	CT-25	3	240	332	137,35	124,560	5,6918	0,0379	CT-24	2	14.976,3503	0,1577
CT-25	3	CT-23	4	240	332	40,95	94,938	1,2934	0,0086	CT-25	3	14.970,6585	0,1956
CT-23	4	CT-22	5	240	332	92,75	60,782	1,8756	0,0125	CT-23	4	14.969,3651	0,2042
CT-22	5	CT-20	6	240	332	112,35	26,626	0,9952	0,0066	CT-22	5	14.967,4895	0,2167
CT-20	6	CT-21	7	240	332	78,1	0,000	0,0000	0,0000	CT-20	6	14.966,4943	0,2234
CT-21	7	CT-27	8	240	332	85,5	-40,607	-1,1551	-0,0077	CT-21	7	14.982,3634	0,1176
CT-27	8	CT-26	9	240	332	82,9	-86,394	-2,3828	-0,0159	CT-27	8	14.983,5185	0,1099
CT-26	9	ETD	1	240	332	318,45	-133,075	-14,0987	-0,0940	CT-26	9	14.985,9013	0,0940

### A.2.2 CAIDA DE TENSION - MT. "Escenario 2 (Circuitos 1 y 2), Potencias Nominales (Pn)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 1</b>													
CR	1	CT-2	2	240	332	43	0,000	0,0000	0,0000	CR	1	0,0000	100,0000
CT-2	2	CT-1	3	240	332	134,6	-39,645	-1,7753	-0,0118	CT-2	2	14.940,1156	0,3992
CT-1	3	CT-3	4	240	332	198,5	-79,289	-5,2362	-0,0349	CT-1	3	14.941,8909	0,3874
CT-3	4	CT-10	5	240	332	128,15	-110,081	-4,6933	-0,0313	CT-3	4	14.947,1271	0,3525
CT-10	5	CT-4	6	240	332	108,35	-149,726	-5,3972	-0,0360	CT-10	5	14.951,8204	0,3212
CT-4	6	CT-5	7	240	332	59	-180,518	-3,5434	-0,0236	CT-4	6	14.957,2176	0,2852
CT-5	7	CT-11	8	240	332	65,05	-211,310	-4,5731	-0,0305	CT-5	7	14.960,7609	0,2616
CT-11	8	CT-12	9	240	332	58,5	-242,102	-4,7119	-0,0314	CT-11	8	14.965,3340	0,2311
CT-12	9	CT-19	10	240	332	76,35	-272,894	-6,9318	-0,0462	CT-12	9	14.970,0459	0,1997
CT-19	10	CT-18	11	240	332	84,75	-288,290	-8,1285	-0,0542	CT-19	10	14.976,9777	0,1535
CT-18	11	ETD	12	240	332	140,3	-319,082	-14,8937	-0,0993	CT-18	11	14.985,1063	0,0993
ETD	12	CR	1	240	332	483,1	0,000	0,0000	0,0000	ETD	12	15.000,0000	0,0000
<b>CIRCUITO 2</b>													
ETD	1	CT-17	2	240	332	37,3	312,539	3,8784	0,0259	ETD	1	15.000,0000	0,0000
CT-17	2	CT-9	3	240	332	135,1	281,747	12,6636	0,0844	CT-17	2	14.996,1216	0,0259
CT-9	3	CT-16	4	240	332	72,3	242,102	5,8234	0,0388	CT-9	3	14.983,4580	0,1103
CT-16	4	CT-8	5	240	332	136,2	211,310	9,5750	0,0638	CT-16	4	14.977,6345	0,1491
CT-8	5	CT-15	6	240	332	102,55	171,665	5,8568	0,0390	CT-8	5	14.968,0595	0,2129
CT-15	6	CT-14	7	240	332	150,15	140,873	7,0372	0,0469	CT-15	6	14.962,2027	0,2520
CT-14	7	CT-13	8	240	332	118,5	101,229	3,9908	0,0266	CT-14	7	14.955,1655	0,2989
CT-13	8	CT-6	9	240	332	79,35	61,584	1,6258	0,0108	CT-13	8	14.951,1747	0,3255
CT-6	9	CT-7	10	240	332	143	30,792	1,4649	0,0098	CT-6	9	14.949,5489	0,3363
CT-7	10	CR	11	240	332	192,2	0,000	0,0000	0,0000	CT-7	10	14.948,0840	0,3461
CR	11	ETD	1	240	332	483,1	0,000	0,0000	0,0000	CR	11	0,0000	100,0000

### A.2.3 CAIDA DE TENSION - MT. "Escenario 2 (Circuito 3), Potencias Nominales (Pn)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 3</b>													
ETD	1	CT-24	2	240	332	461,05	0,000	0,0000	0,0000	ETD	1	15.000,0000	0,0000
CT-24	2	CT-25	3	240	332	137,35	-30,792	-1,4071	-0,0094	CT-24	2	14.938,5684	0,4095
CT-25	3	CT-23	4	240	332	40,95	-61,584	-0,8390	-0,0056	CT-25	3	14.939,9754	0,4002
CT-23	4	CT-22	5	240	332	92,75	-101,229	-3,1236	-0,0208	CT-23	4	14.940,8144	0,3946
CT-22	5	CT-20	6	240	332	112,35	-140,873	-5,2656	-0,0351	CT-22	5	14.943,9381	0,3737
CT-20	6	CT-21	7	240	332	78,1	-171,665	-4,4604	-0,0297	CT-20	6	14.949,2036	0,3386
CT-21	7	CT-27	8	240	332	85,5	-220,163	-6,2626	-0,0418	CT-21	7	14.953,6641	0,3089
CT-27	8	CT-26	9	240	332	82,9	-268,660	-7,4097	-0,0494	CT-27	8	14.959,9267	0,2672
CT-26	9	ETD	1	240	332	318,45	-308,305	-32,6636	-0,2178	CT-26	9	14.967,3364	0,2178

### A.2.4 CAIDA DE TENSION - MT. "Escenerio 3 (Circuitos 1 y 2), Potencias Nominales (Pn)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 1</b>													
CR	1	CT-2	2	240	332	43	46,188	0,6608	0,0044	CR	1	14.947,2931	0,3514
CT-2	2	CT-1	3	240	332	134,6	15,396	0,6894	0,0046	CT-2	2	14.946,6323	0,3558
CT-1	3	CT-3	4	240	332	198,5	0,000	0,0000	0,0000	CT-1	3	14.945,9429	0,3604
CT-3	4	CT-10	5	240	332	128,15	-30,792	-1,3128	-0,0088	CT-3	4	14.964,5875	0,2361
CT-10	5	CT-4	6	240	332	108,35	-61,584	-2,2199	-0,0148	CT-10	5	14.965,9003	0,2273
CT-4	6	CT-5	7	240	332	59	-92,376	-1,8132	-0,0121	CT-4	6	14.968,1203	0,2125
CT-5	7	CT-11	8	240	332	65,05	-123,168	-2,6656	-0,0178	CT-5	7	14.969,9335	0,2004
CT-11	8	CT-12	9	240	332	58,5	-162,813	-3,1687	-0,0211	CT-11	8	14.972,5991	0,1827
CT-12	9	CT-19	10	240	332	76,35	-193,605	-4,9178	-0,0328	CT-12	9	14.975,7678	0,1615
CT-19	10	CT-18	11	240	332	84,75	-233,250	-6,5766	-0,0438	CT-19	10	14.980,6856	0,1288
CT-18	11	ETD	12	240	332	140,3	-272,894	-12,7378	-0,0849	CT-18	11	14.987,2622	0,0849
ETD	12	CR	1	240	332	483,1	327,935	52,7069	0,3514	ETD	12	15.000,0000	0,0000
<b>CIRCUITO 2</b>													
ETD	1	CT-17	2	240	332	37,3	30,792	0,3821	0,0025	ETD	1	15.000,0000	0,0000
CT-17	2	CT-9	3	240	332	135,1	0,000	0,0000	0,0000	CT-17	2	14.999,6179	0,0025
CT-9	3	CT-16	4	240	332	72,3	-39,645	-0,9536	-0,0064	CT-9	3	14.889,4710	0,7369
CT-16	4	CT-8	5	240	332	136,2	-70,437	-3,1917	-0,0213	CT-16	4	14.890,4246	0,7305
CT-8	5	CT-15	6	240	332	102,55	-110,081	-3,7557	-0,0250	CT-8	5	14.893,6163	0,7092
CT-15	6	CT-14	7	240	332	150,15	-140,873	-7,0372	-0,0469	CT-15	6	14.897,3720	0,6842
CT-14	7	CT-13	8	240	332	118,5	-180,518	-7,1168	-0,0474	CT-14	7	14.904,4092	0,6373
CT-13	8	CT-6	9	240	332	79,35	-220,163	-5,8121	-0,0387	CT-13	8	14.911,5259	0,5898
CT-6	9	CT-7	10	240	332	143	-250,955	-11,9392	-0,0796	CT-6	9	14.917,3380	0,5511
CT-7	10	CR	11	240	332	192,2	-281,747	-18,0159	-0,1201	CT-7	10	14.929,2772	0,4715
CR	11	ETD	1	240	332	483,1	-327,935	-52,7069	-0,3514	CR	11	14.947,2931	0,3514

## A.2.5 CAIDA DE TENSION - MT. "Escenario 3 (Circuitos 1 y 2), Potencias Demandadas (P)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 1</b>													
CR	1	CT-2	2	240	332	43	148,255	2,1209	0,0141	CR	1	14.947,3319	0,3511
CT-2	2	CT-1	3	240	332	134,6	118,074	5,2874	0,0352	CT-2	2	14.945,2110	0,3653
CT-1	3	CT-3	4	240	332	198,5	105,825	6,9886	0,0466	CT-1	3	14.939,9237	0,4005
CT-3	4	CT-10	5	240	332	128,15	77,705	3,3129	0,0221	CT-3	4	14.932,9350	0,4471
CT-10	5	CT-4	6	240	332	108,35	49,131	1,7710	0,0118	CT-10	5	14.929,6221	0,4692
CT-4	6	CT-5	7	240	332	59	22,188	0,4355	0,0029	CT-4	6	14.927,8511	0,4810
CT-5	7	CT-11	8	240	332	65,05	0,000	0,0000	0,0000	CT-5	7	14.927,4156	0,4839
CT-11	8	CT-12	9	240	332	58,5	-30,566	-0,5949	-0,0040	CT-11	8	14.989,3978	0,0707
CT-12	9	CT-19	10	240	332	76,35	-57,373	-1,4573	-0,0097	CT-12	9	14.989,9927	0,0667
CT-19	10	CT-18	11	240	332	84,75	-93,713	-2,6423	-0,0176	CT-19	10	14.991,4500	0,0570
CT-18	11	ETD	12	240	332	140,3	-126,567	-5,9077	-0,0394	CT-18	11	14.994,0923	0,0394
ETD	12	CR	1	240	332	483,1	327,693	52,6681	0,3511	ETD	12	15.000,0000	0,0000
<b>CIRCUITO 2</b>													
ETD	1	CT-17	2	240	332	37,3	94,981	1,1787	0,0079	ETD	1	15.000,0000	0,0000
CT-17	2	CT-9	3	240	332	135,1	65,342	2,9369	0,0196	CT-17	2	14.998,8213	0,0079
CT-9	3	CT-16	4	240	332	72,3	27,305	0,6568	0,0044	CT-9	3	14.995,8844	0,0274
CT-16	4	CT-8	5	240	332	136,2	0,000	0,0000	0,0000	CT-16	4	14.995,2276	0,0318
CT-8	5	CT-15	6	240	332	102,55	-38,037	-1,2977	-0,0087	CT-8	5	14.916,6135	0,5559
CT-15	6	CT-14	7	240	332	150,15	-67,018	-3,3478	-0,0223	CT-15	6	14.917,9112	0,5473
CT-14	7	CT-13	8	240	332	118,5	-98,670	-3,8900	-0,0259	CT-14	7	14.921,2590	0,5249
CT-13	8	CT-6	9	240	332	79,35	-133,205	-3,5165	-0,0234	CT-13	8	14.925,1490	0,4990
CT-6	9	CT-7	10	240	332	143	-151,182	-7,1925	-0,0480	CT-6	9	14.928,6655	0,4756
CT-7	10	CR	11	240	332	192,2	-179,439	-11,4739	-0,0765	CT-7	10	14.935,8580	0,4276
CR	11	ETD	1	240	332	483,1	-327,693	-52,6681	-0,3511	CR	11	14.947,3319	0,3511

### A.2.6 CAIDA DE TENSION - MT. "Escenario 3 (Circuito 3), Potencias Nominales (Pn)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 3</b>													
ETD	1	CT-24	2	240	332	461,05	308,305	47,2902	0,3153	ETD	1	15.000,0000	0,0000
CT-24	2	CT-25	3	240	332	137,35	277,513	12,6810	0,0845	CT-24	2	14.952,7098	0,3153
CT-25	3	CT-23	4	240	332	40,95	246,721	3,3613	0,0224	CT-25	3	14.940,0287	0,3998
CT-23	4	CT-22	5	240	332	92,75	207,076	6,3898	0,0426	CT-23	4	14.936,6675	0,4222
CT-22	5	CT-20	6	240	332	112,35	167,432	6,2583	0,0417	CT-22	5	14.930,2777	0,4648
CT-20	6	CT-21	7	240	332	78,1	136,640	3,5503	0,0237	CT-20	6	14.924,0194	0,5065
CT-21	7	CT-27	8	240	332	85,5	88,142	2,5072	0,0167	CT-21	7	14.920,4691	0,5302
CT-27	8	CT-26	9	240	332	82,9	39,645	1,0934	0,0073	CT-27	8	14.917,9619	0,5469
CT-26	9	ETD	1	240	332	318,45	0,000	0,0000	0,0000	CT-26	9	14.916,8684	0,5542

### A.2.7 CAIDA DE TENSION - MT. "Escenario 3 (Circuito 3), Potencias Demandadas (P)"

LINEA				Sección (mm <sup>2</sup> )	I. Admisible (A)	Longitud (m)	I. Cálculo (A)	C.D.T. (V) Linea N.O. N.D	C.D.T.% N.O.-N.D.	Nudo Origen (N.O.)	Tensión N.O. (V)	C.D.T.% N.O.-ETD	
Nudo Origen(N.O.)	Nudo Destino(N.D.)												
<b>CIRCUITO 3</b>													
ETD	1	CT-24	2	240	332	461,05	287,257	44,0618	0,2937	ETD	1	15.000,0000	0,0000
CT-24	2	CT-25	3	240	332	137,35	257,635	11,7727	0,0785	CT-24	2	14.955,9382	0,2937
CT-25	3	CT-23	4	240	332	40,95	228,013	3,1064	0,0207	CT-25	3	14.944,1655	0,3722
CT-23	4	CT-22	5	240	332	92,75	193,857	5,9819	0,0399	CT-23	4	14.941,0591	0,3929
CT-22	5	CT-20	6	240	332	112,35	159,701	5,9693	0,0398	CT-22	5	14.935,0772	0,4328
CT-20	6	CT-21	7	240	332	78,1	133,075	3,4577	0,0231	CT-20	6	14.929,1079	0,4726
CT-21	7	CT-27	8	240	332	85,5	92,468	2,6303	0,0175	CT-21	7	14.925,6502	0,4957
CT-27	8	CT-26	9	240	332	82,9	46,681	1,2875	0,0086	CT-27	8	14.923,0200	0,5132
CT-26	9	ETD	1	240	332	318,45	0,000	0,0000	0,0000	CT-26	9	14.921,7325	0,5218