

**ANEXO 10**

**MODELOS DINÁMICOS**



*de*

## Datos de los Modelos de Generadores, Escitadores, Gobernadores y Estabilizadores de Panamá

/\* BASE DE DATOS DE PANAMA

/\* MODELO DE GENERADORES DE PANAMA

101,'GENSAL' ,B1, 4,0.02,0.02,2.69,1,0.99,0.833,0.3452,0.3100,0.16,0.19,0.343/  
102,'GENSAL' ,B2, 4,0.02,0.02,2.69,1,0.99,0.833,0.3452,0.3100,0.16,0.19,0.343/  
108,'GENSAL' ,B3, 5,0.07,0.08,2.96,1,0.90,0.570,0.4000,0.24,0.10,0.92,1.01/  
97,'GENSAL' ,F1,9,0.06,0.09,4.50,1,1.02,0.54,0.3,0.155,0.12,0.2,0.67000/  
98,'GENSAL' ,F2,9,0.06,0.09,4.50,1,1.02,0.54,0.3,0.155,0.12,0.2,0.67000/  
99,'GENSAL' ,F3,9,0.06,0.09,4.50,1,1.02,0.54,0.3,0.155,0.12,0.2,0.67000/  
94,'GENSAL' ,L1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
95,'GENSAL' ,L2,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
90,'GENSAL' ,E1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
91,'GENSAL' ,E2,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
134,'GENSAL' ,G1,5,0.02,0.09,1.398,1,1.09,0.84,0.47,0.36,0.14,0.19,0.59000/  
135,'GENSAL' ,G2,5,0.02,0.09,1.398,1,1.09,0.84,0.47,0.36,0.14,0.19,0.59000/  
136,'GENSAL' ,G3,5,0.02,0.09,1.398,1,1.09,0.84,0.47,0.36,0.14,0.19,0.59000/  
140,'GENSAL' ,G1,5,0.02,0.09,2.233,1,1.01,0.63,0.33,0.33,0.12,0.19,0.59000/  
140,'GENSAL' ,G2,5,0.02,0.09,2.233,1,1.01,0.63,0.33,0.33,0.12,0.19,0.59000/  
140,'GENSAL' ,G3,5,0.02,0.09,2.233,1,1.01,0.63,0.33,0.33,0.12,0.19,0.59000/  
141,'GENSAL' ,G4,5,0.02,0.09,2.210,1,1.01,0.78,0.38,0.38,0.12,0.19,0.59000/  
141,'GENSAL' ,G5,5,0.02,0.09,1.991,1,1.10,0.78,0.38,0.38,0.12,0.19,0.59000/  
141,'GENSAL' ,G6,5,0.02,0.09,1.991,1,1.10,0.78,0.38,0.38,0.12,0.19,0.59000/  
142,'GENSAL' ,C1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
143,'GENSAL' ,C2,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
193,'GENSAL' ,G1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
193,'GENSAL' ,G2,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
193,'GENSAL' ,G3,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
204,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
204,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
106,'GENSAL' ,M1,4,6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
106,'GENSAL' ,M2,4,6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
106,'GENSAL' ,M3,4,6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
107,'GENSAL' ,M4,4,6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
107,'GENSAL' ,M5,4,6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
107,'GENSAL' ,M6,4,6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
75,'GENSAL' ,P1,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
75,'GENSAL' ,P2,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
75,'GENSAL' ,P3,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
75,'GENSAL' ,P4,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
75,'GENSAL' ,P5,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
75,'GENSAL' ,P6,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
76,'GENSAL' ,IP,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
76,'GENSAL' ,2P,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
76,'GENSAL' ,P0,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
76,'GENSAL' ,P7,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
76,'GENSAL' ,P8,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
76,'GENSAL' ,P9,3,33,0.021,0.084,0.6369,0,1.84,0.89,0.31,0.257,0.157,0.1,0.50000/  
116,'GENSAL' ,P1,5,3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
116,'GENSAL' ,P2,5,3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
116,'GENSAL' ,P3,5,3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
70,'GENROU' ,J5,8,0.05,0.7,0.1,1.45,0.2,0.1,1.3,0.171,0.6,0.116,0.06,0.1,0.50000/  
72,'GENROU' ,T8,5,936,0.022,0.541,0.045,1.45,0,2.078,1.931,0.188,0.377,0.129,0.162,0.1,0.50000/  
73,'GENROU' ,V9,6,5,0.023,0.7,0.1,1.887,0,1.72,1.61,0.2,0.6,0.16,0.145,0.1,0.40000/  
66,'GENROU' ,V2,5,1,0.02,0.7,0.1,4.45,0,1.41,1.35,0.156,0.6,0.12,0.06,0.1,0.50000/  
67,'GENROU' ,V3,5,1,0.02,0.7,0.1,4.45,0,1.41,1.35,0.156,0.6,0.12,0.06,0.1,0.50000/  
68,'GENROU' ,V4,5,1,0.02,0.7,0.1,4.45,0,1.41,1.35,0.156,0.6,0.12,0.06,0.1,0.50000/  
71,'GENROU' ,J6,8,0.05,0.7,0.1,1.45,0,2.01,1.3,0.171,0.6,0.116,0.06,0.1,0.50000/  
104,'GENROU' ,CO,7,0.025,0.60,0.05,1.35,0.2,2.50,2.30,0.25,0.40,0.20,0.06,0.1,0.50000/  
113,'GENROU' ,GP,8,8,0.04,0.7,0.1,3.0,0.2,0.1,1,0.684,0.8,0.561,0.06,0.1,0.50000/  
114,'GENROU' ,PG,8,8,0.04,0.7,0.1,3.0,0.2,0.1,1,0.684,0.8,0.561,0.06,0.1,0.50000/  
126,'GENROU' ,G1,8,0.05,0.7,0.1,0.5414,0.156,1.51,0.23,0.23,0.14,0.06,0.1,0.50000/  
127,'GENROU' ,G2,8,0.05,0.7,0.1,0.5414,0.156,1.51,0.23,0.23,0.14,0.06,0.1,0.50000/  
128,'GENROU' ,G3,5,0.05,0.7,0.1,3.12,0,1.95,1.89,0.33,0.33,0.15,0.055,0.1,0.50000/  
129,'GENROU' ,G4,5,0.05,0.7,0.1,4.73,0,1.95,1.95,0.3,0.3,0.16,0.05,0.1,0.50000/  
130,'GENROU' ,G5,5,0.05,0.700,0.10,1.45,0,1.8,1.8,0.2,0.2,0.15,0.068,0.1,0.50000



151,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
301,'GENSAL' ,C1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
303,'GENSAL' ,S1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
304,'GENSAL' ,A1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
302,'GENSAL' ,P1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
305,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
305,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
305,'GENSAL' ,3 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
307,'GENSAL' ,G1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
308,'GENSAL' ,G2,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
311,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
311,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
312,'GENSAL' ,1 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
312,'GENSAL' ,2 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
312,'GENSAL' ,3 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
313,'GENSAL' ,1 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2240,0.157,0.1,0.50000/  
313,'GENSAL' ,2 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2240,0.157,0.1,0.50000/  
314,'GENSAL' ,1 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
314,'GENSAL' ,2 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
314,'GENSAL' ,3 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
315,'GENSAL' ,1 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
315,'GENSAL' ,2 ,4.6,0.035,0.031,0.93,0,1.46,0.80,0.334,0.2576,0.157,0.1,0.50000/  
316,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
316,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
317,'GENSAL' ,M1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
317,'GENSAL' ,M2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
318,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
319,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.30,0.1,0.1,0.50000/  
340,'GENSAL' ,P1,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
342,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
342,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
343,'GENSAL' ,1 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
343,'GENSAL' ,2 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
343,'GENSAL' ,3 ,7,0.06,0.09,2.44,1,1.09,0.62,0.2,0.11,0.1,0.1,0.50000/  
516,'GENSAL' ,G1,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
516,'GENSAL' ,G2,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
516,'GENSAL' ,G3,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
517,'GENSAL' ,G4,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
517,'GENSAL' ,G5,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
517,'GENSAL' ,G6,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/  
517,'GENSAL' ,G7,5.3,0.038,0.149,0.971,0,1.53,0.830,0.332,0.223,0.14,0.1,0.50000/

/\* MODELO DE GOBERNADORES DE PANAMA

101,'HYGOV' ,B1,0.03,0.8,14.5,0.03,1,0.167,0.893,0.266,1.15,1.36,0.5,0.08/  
102,'HYGOV' ,B2,0.03,0.8,14.5,0.03,1,0.167,0.893,0.266,1.15,1.36,0.5,0.08/  
108,'HYGOV' ,B3,0.03,0.8,14.5,0.03,1,0.167,0.870,0.260,1.15,1.36,0.5,0.08/  
97,'HYGOV' ,F1,0.03,0.5,11.8,0.03,0.2,0.167,0.95,0.05,1.85,1.05,0.5,0.08/  
98,'HYGOV' ,F2,0.03,0.5,11.8,0.03,0.2,0.167,0.95,0.05,1.85,1.05,0.5,0.08/  
99,'HYGOV' ,F3,0.03,0.5,11.8,0.03,0.2,0.167,0.95,0.05,1.85,1.05,0.5,0.08/  
94,'HYGOV' ,L1,0.03,1.0,14,0.025,0.2,0.167,1.2,0.01,2.8,1.05,0.5,0.08/  
95,'HYGOV' ,L2,0.03,1.0,14,0.025,0.2,0.167,1.2,0.01,2.8,1.05,0.5,0.08/  
90,'HYGOV' ,E1,0.03,1.0,16,0.025,0.2,0.167,1.2,0.01,2.52,1.05,0.5,0.08/  
91,'HYGOV' ,E2,0.03,1.0,16,0.025,0.2,0.167,1.2,0.01,2.52,1.05,0.5,0.08/  
134,'HYGOV' ,G1,0.03,1.0,16,0.025,0.2,0.167,0.923,0.05,2.52,1.05,0.5,0.08/  
135,'HYGOV' ,G2,0.03,1.0,16,0.025,0.2,0.167,0.923,0.05,2.52,1.05,0.5,0.08/  
136,'HYGOV' ,G3,0.03,1.0,16,0.025,0.2,0.167,0.923,0.05,2.52,1.05,0.5,0.08/  
73,'TGOV1' ,V9,0.06,0.05,0.859,0,0,1,3,0.00/  
66,'TGOV1' ,V2,0.06,0.05,0.851,0,0,1,3,0.00/  
67,'TGOV1' ,V3,0.06,0.05,0.851,0,0,1,3,0.00/  
68,'TGOV1' ,V4,0.06,0.05,0.851,0,0,1,3,0.00/  
128,'TGOV1' ,G3,0.03,0.05,0.74,0.327,1,3,0.00/  
129,'TGOV1' ,G4,0.03,0.05,0.74,0.1,1,3,0.00/  
70,'GAST' ,J5,0.04,0.05,0.05,3,1,2,0.84,0.05,0.5/  
71,'GAST' ,J6,0.04,0.05,0.05,3,1,2,0.84,0.05,0.5/  
72,'GAST' ,T8,0.04,0.05,0.05,3,1,2,0.7,0.05,0.5/  
104,'GAST' ,CO,0.03,0.015,0.2,5,1.05,0.67,0.84,0,0.5/  
113,'GAST' ,GP,0.04,0.2,0.05,3,1,2,0.69,0.05,0.5/  
114,'GAST' ,PG,0.04,0.2,0.05,3,1,2,0.69,0.05,0.5/  
126,'GAST' ,G1,0.03,0.01,0.05,3,1,2,0.74,0.05,0.5/  
127,'GAST' ,G2,0.03,0.01,0.05,3,1,2,0.74,0.05,0.5/





/\* MODELO DE EXCITADORES DE PANAMA

101,'EXST1' ,B1,0.025,3,-3,0.0050,0.088,60,0.00133,6,-5.3,0.02,0.1,1.5/  
 102,'EXST1' ,B2,0.025,3,-3,0.0050,0.088,60,0.00133,6,-5.3,0.02,0.1,1.5/  
 108,'EXST1' ,B3,0.025,4,-1,0.0080,0.088,50,0.005,10,-10,0.02,0.10,1.5/  
 97,'EXST1' ,F1,0.025,3,-3,0.0080,0.088,60,0.00133,6,-5.3,0.0,0.0,0.3/  
 98,'EXST1' ,F2,0.025,3,-3,0.0080,0.088,60,0.00133,6,-5.3,0.0,0.0,0.3/  
 99,'EXST1' ,F3,0.025,3,-3,0.0080,0.088,60,0.00133,6,-5.3,0.0,0.0,0.3/  
 94,'EXST1' ,L1,0.025,3,-3,0.0080,0.088,80,0.0027,3,-3,0.02,0.1,1.5/  
 95,'EXST1' ,L2,0.025,3,-3,0.0080,0.088,80,0.0027,3,-3,0.02,0.1,1.5/  
 90,'EXST1' ,E1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 91,'EXST1' ,E2,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 70,'IEEET2' ,J5,0.025,400,0.1,6.59,0,1,1.3,0.2,5,1.3,2.4,0.03,5,0.5/  
 71,'IEEET2' ,J6,0.025,400,0.1,6.59,0,1,1.3,0.2,5,1.3,2.4,0.03,5,0.5/  
 72,'ESST4B' ,T8,0,3.38,3.38,1,-0.87,0.01,1,0,1,-0.87,0,5.92,0,7.4,0.11,0,2/  
 73,'EXAC4' ,V9,0,0.2,-0.2,1.149,22.97,1000,0.002,5.236,-4.189,0/  
 66,'IEEET1' ,V2,0,217.03,1,3,-3,1,0.8,0.078,0.726,0,2.4,0.03,5,0.5/  
 67,'IEEET1' ,V3,0,126.37,1,3,-3,1,0.8,0.078,0.726,0,2.4,0.03,5,0.5/  
 68,'IEEET1' ,V4,0,126.37,1,2,0,1,0.8,0.078,0.726,0,2.4,0.03,5,0.5/  
 104,'EXAC1' ,CO,0,1,1,4000,0.05,56,0,1.5,0.025,0.4,0.1,2,1.9,0.001,10,0.01/  
 106,'ESAC8B' ,M1,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 106,'ESAC8B' ,M2,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 106,'ESAC8B' ,M3,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 107,'ESAC8B' ,M4,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 107,'ESAC8B' ,M5,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 107,'ESAC8B' ,M6,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 116,'ESAC8B' ,P1,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 116,'ESAC8B' ,P2,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 116,'ESAC8B' ,P3,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 75,'SEXS' ,P1,0.1,10,100,0.05,0,2,5/  
 75,'SEXS' ,P2,0.1,10,100,0.05,0,2,5/  
 75,'SEXS' ,P3,0.1,10,100,0.05,0,2,5/  
 75,'SEXS' ,P4,0.1,10,100,0.05,0,2,5/  
 75,'SEXS' ,P5,0.1,10,100,0.05,0,2,5/  
 75,'SEXS' ,P6,0.1,10,100,0.05,0,2,5/  
 76,'SEXS' ,P7,0.1,10,100,0.05,0,2,5/  
 76,'SEXS' ,P8,0.1,10,100,0.05,0,2,5/  
 76,'SEXS' ,P9,0.1,10,100,0.05,0,2,5/  
 113,'SEXS' ,GP,0.2,10,100,0.05,0,4/  
 114,'SEXS' ,PG,0.2,10,100,0.05,0,4/  
 126,'SEXS' ,G1,0.2,10,100,0.05,0,4/  
 127,'SEXS' ,G2,0.2,10,100,0.05,0,4/  
 128,'SEXS' ,G3,0.1,10,100,0.05,0,4/  
 129,'SEXS' ,G4,0.1,10,100,0.05,0,4/  
 130,'SEXS' ,G5,0.1,10,100,0.05,0,4/  
 134,'SEXS' ,G1,0.1,10,100,0.05,0,4/  
 135,'SEXS' ,G2,0.1,10,100,0.05,0,4/  
 136,'SEXS' ,G3,0.1,10,100,0.05,0,4/  
 140,'SEXS' ,G1,0.1,10,100,0.05,0,4/  
 140,'SEXS' ,G2,0.1,10,100,0.05,0,4/  
 140,'SEXS' ,G3,0.1,10,100,0.05,0,4/  
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 141,'SEXS' ,G5,0.1,10,100,0.05,0,4/  
 141,'SEXS' ,G6,0.1,10,100,0.05,0,4/  
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 193,'EXST1' ,G2,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 193,'EXST1' ,G3,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 204,'EXST1' ,J1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 204,'EXST1' ,J2,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 151,'EXST1' ,J1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 301,'EXST1' ,C1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 303,'EXST1' ,S1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 304,'EXST1' ,A1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 302,'EXST1' ,P1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
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 305,'EXST1' ,J2,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 305,'EXST1' ,J3,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/



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142,'EXST1' ,C1,0.02,10,-10,0.025,0.10,30,0.05,3.5,-3.1,0.06,0.1,1.5/  
 143,'EXST1' ,C2,0.02,10,-10,0.025,0.10,30,0.05,3.5,-3.1,0.06,0.1,1.5/  
 307,'EXST1' ,G1,0.02,10,-10,0.025,0.10,30,0.05,3.5,-3.1,0.06,0.1,1.5/  
 308,'EXST1' ,G2,0.02,10,-10,0.025,0.10,30,0.05,3.5,-3.1,0.06,0.1,1.5/  
 311,'EXST1' ,1 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 311,'EXST1' ,2 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 312,'ESAC8B' ,1 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 312,'ESAC8B' ,2 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 312,'ESAC8B' ,3 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 313,'ESAC8B' ,1 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 313,'ESAC8B' ,2 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 314,'ESAC8B' ,1 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 314,'ESAC8B' ,2 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 315,'ESAC8B' ,1 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 315,'ESAC8B' ,2 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 314,'ESAC8B' ,3 ,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 316,'EXST1' ,1 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 316,'EXST1' ,2 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 317,'EXST1' ,M1 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 317,'EXST1' ,M2 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 318,'EXST1' ,1 ,0.02,10,-10,0.025,0.10,30,0.05,3.5,-3.1,0.06,0.1,1.5/  
 318,'EXST1' ,2 ,0.02,10,-10,0.025,0.10,30,0.05,3.5,-3.1,0.06,0.1,1.5/  
 340,'EXST1' ,P1,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 342,'EXST1' ,1 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
 342,'EXST1' ,2 ,0.025,3,-3,0.0080,0.088,100,0.0027,3,-3,0.02,0.1,1.5/  
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 343,'EXST1' ,3 ,0.025,3,-3,0.0080,0.088,80,0.0027,3,-3,0.02,0.1,1.5/  
 516,'ESAC8B' ,G1,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 516,'ESAC8B' ,G2,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/  
 516,'ESAC8B' ,G3,0,100,150,25,0.03,1,0,10,0,1,1,3.8,1.36,4.5,1.5/

/\* MODELO DE ESTABILIZADORES DE PANAMA

97,'STAB2A' ,F1,1.0,4.4,10,1.8,1,1.41,0.01,0.05/  
 98,'STAB2A' ,F2,1.0,4.4,10,1.8,1,1.41,0.01,0.05/  
 99,'STAB2A' ,F3,1.0,4.4,10,1.8,1,1.41,0.01,0.05/  
 101,'STAB2A' ,B1,1.0,4.4,7.85,1.8,0.785,1.41,0.01,0.03/  
 102,'STAB2A' ,B2,1.0,4.4,7.85,1.8,0.785,1.41,0.01,0.03/  
 108,'STAB2A' ,B3,1.0,4.5,25,2.5,1,0.01,0.03/



# MODELOS DE GENERADORES

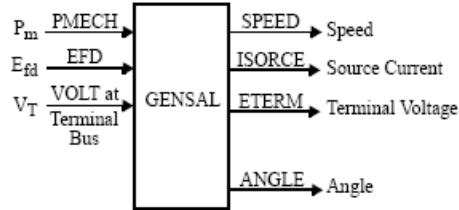
GENERATOR AND COMPENSATOR MODEL DATA SHEETS  
GENSAL

Power Technologies, Inc.

## GENSAL

### Salient Pole Generator Model (Quadratic Saturation on d-Axis)

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K.  
The machine MVA is \_\_\_\_\_ for each of units =  
\_\_\_\_\_ MBASE.  
ZSORCE for this machine is \_\_\_\_\_ + j \_\_\_\_\_ on  
the above MBASE.

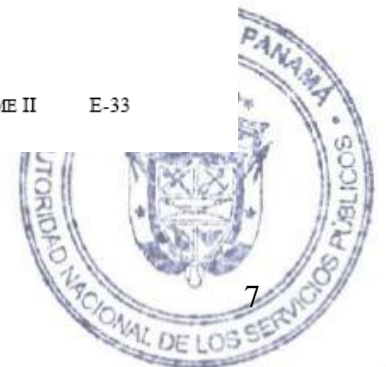


CONs	#	Value	Description
J			$T'_{do} (>0)$ (sec)
J+1			$T''_{do} (>0)$ (sec)
J+2			$T''_{qo} (>0)$ (sec)
J+3			Inertia, H
J+4			Speed damping, D
J+5			$X_d$
J+6			$X_q$
J+7			$X'_d$
J+8			$X''_d = X''_q$
J+9			$X_l$
J+10			S(1.0)
J+11			S(1.2)

STATEs	#	Description
K		$E'_q$
K+1		$\Psi''_q$
K+2		$\psi_{kd}$
K+3		$\Delta$ speed (pu)
K+4		Angle (radians)

Note:  $X_d, X_q, X'_d, X''_d, X''_q, X_l, H,$  and  $D$  are in pu,  
machine MVA base.  
 $X''_q$  must be equal to  $X''_d$ .

IBUS, 'GENSAL', I,  $T'_{do}, T''_{do}, T''_{qo}, H, D, X_d, X_q, X'_d, X''_d, X_l, S(1.0), S(1.2)$

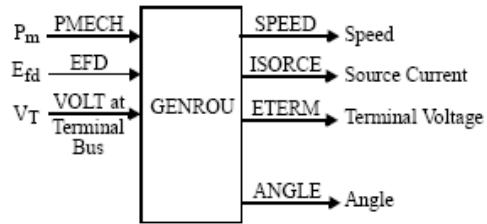


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**GENROU**

**Round Rotor Generator Model (Quadratic Saturation)**

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K,  
The machine MVA is \_\_\_\_\_ for each of \_\_\_\_\_  
units = \_\_\_\_\_ MBASE.  
ZSORCE for this machine is \_\_\_\_\_ + j \_\_\_\_\_ on  
the above MBASE

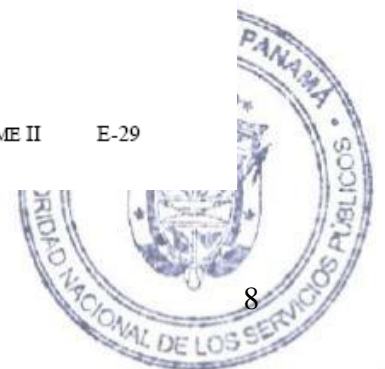


CONs	#	Value	Description
J			$T'_{do} (>0)$ (sec)
J+1			$T''_{do} (>0)$ (sec)
J+2			$T'_{qo} (>0)$ (sec)
J+3			$T''_{qo} (>0)$ (sec)
J+4			Inertia, H
J+5			Speed damping, D
J+6			$X_d$
J+7			$X_q$
J+8			$X'_d$
J+9			$X'_q$
J+10			$X''_d = X''_q$
J+11			$X_l$
J+12			S(1.0)
J+13			S(1.2)

STATEs	#	Description
K		$E'_q$
K+1		$E'_d$
K+2		$\psi_{kd}$
K+3		$\psi_{kq}$
K+4		$\Delta$ speed (pu)
K+5		Angle (radians)

Note:  $X_d, X_q, X'_d, X'_q, X''_d, X''_q, X_l, H,$  and  $D$  are in pu,  
machine MVA base.  
 $X''_q$  must be equal to  $X''_d$ .

IBUS, 'GENROU', I,  $T'_{do}, T''_{do}, T'_{qo}, T''_{qo}, H, D, X_d, X_q, X'_d, X'_q, X''_d, X_l, S(1.0), S(1.2)$





# MODELOS DE GOBERNADORES

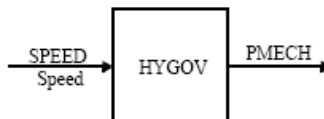
Power Technologies, Inc.

GOVERNOR MODEL DATA SHEETS  
HYGOV

## HYGOV

### Hydro Turbine-Governor

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K,  
and VARs starting with # \_\_\_\_\_ L.

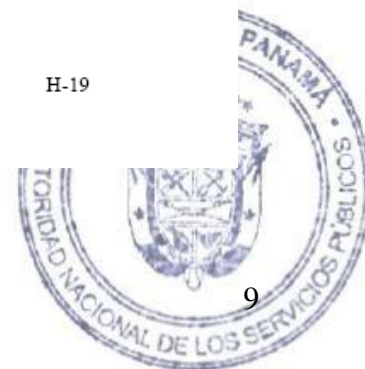
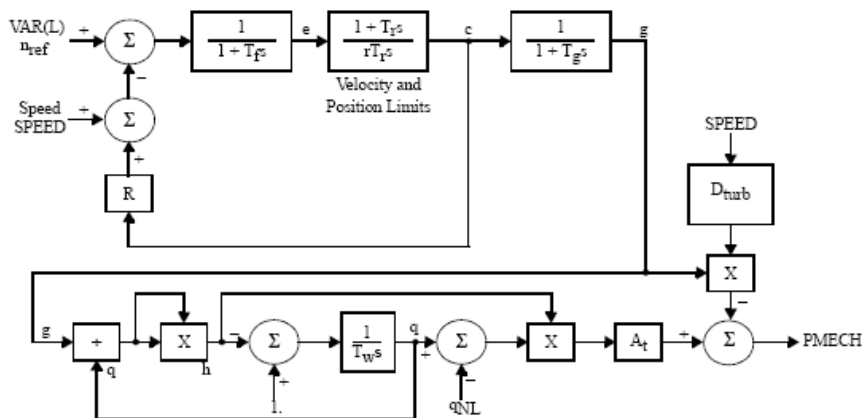


CONs	#	Value	Description
J			R, permanent droop
J+1		r	temporary droop
J+2		$T_Y$ ( $\geq 0$ )	governor time constant
J+3		$T_F$ ( $\geq 0$ )	filter time constant
J+4		$T_g$ ( $\geq 0$ )	servo time constant
J+5		$\pm$ VELM	gate velocity limit
J+6		$G_{MAX}$	maximum gate limit
J+7		$G_{MIN}$	minimum gate limit
J+8		$T_W$ ( $\geq 0$ )	water time constant
J+9		$A_t$	turbine gain
J+10		$D_{turb}$	turbine damping
J+11		$q_{NL}$	no load flow

STATEs	#	Description
K		e, filter output
K+1		c, desired gate
K+2		g, gate opening
K+3		q, turbine flow

VARs	#	Description
L		Speed reference
L+1		h, turbine head

IBUS, 'HYGOV', I, R, r,  $T_Y$ ,  $T_F$ ,  $T_g$ , VELM,  $G_{MAX}$ ,  $G_{MIN}$ ,  $T_W$ ,  $A_t$ ,  $D_{turb}$ ,  $q_{NL}$ /



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**TGOV1**  
**Steam Turbine-Governor**

This model is located at system bus #\_\_\_\_\_ IBUS,  
machine #\_\_\_\_\_ I.  
This model uses CONs starting with #\_\_\_\_\_ J,  
and STATEs starting with #\_\_\_\_\_ K,  
and VAR #\_\_\_\_\_ L.



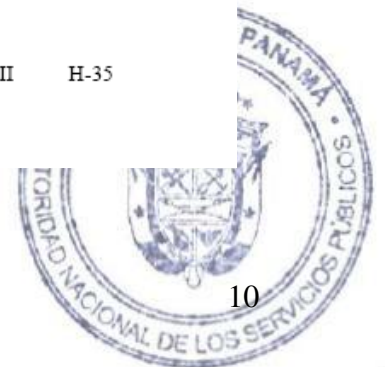
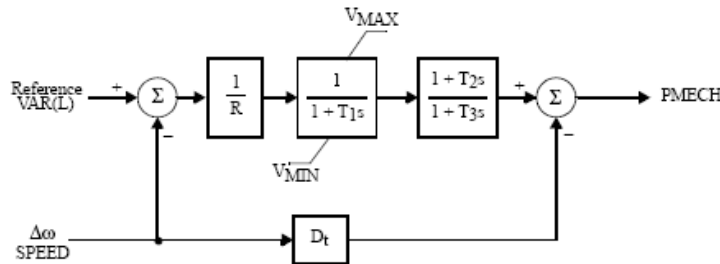
CONs	#	Value	Description
J			R
J+1			T <sub>1</sub> (>0) (sec)
J+2			V <sub>MAX</sub>
J+3			V <sub>MIN</sub>
J+4			T <sub>2</sub> (sec)
J+5			T <sub>3</sub> (>0) (sec)
J+6			D <sub>t</sub>

STATEs	#	Description
K		Valve opening
K+1		Turbine power

VAR	#	Description
L		Reference

Note: V<sub>MAX</sub>, V<sub>MIN</sub>, D<sub>t</sub> are in per unit on generator base.  
T<sub>2</sub>/T<sub>3</sub> = high-pressure fraction.  
T<sub>3</sub> = reheater time constant.

IBUS, 'TGOV1', I, R, T<sub>1</sub>, V<sub>MAX</sub>, V<sub>MIN</sub>, T<sub>2</sub>, T<sub>3</sub>, D<sub>t</sub>/

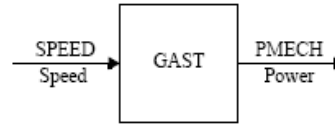


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GAST

Gas Turbine-Governor

This model is located at system bus # \_\_\_\_\_ IBUS,  
 machine # \_\_\_\_\_ I.  
 This model uses CONs starting with # \_\_\_\_\_ J,  
 and STATES starting with # \_\_\_\_\_ K,  
 and VAR # \_\_\_\_\_ L.

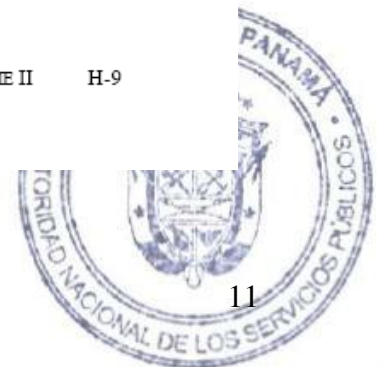
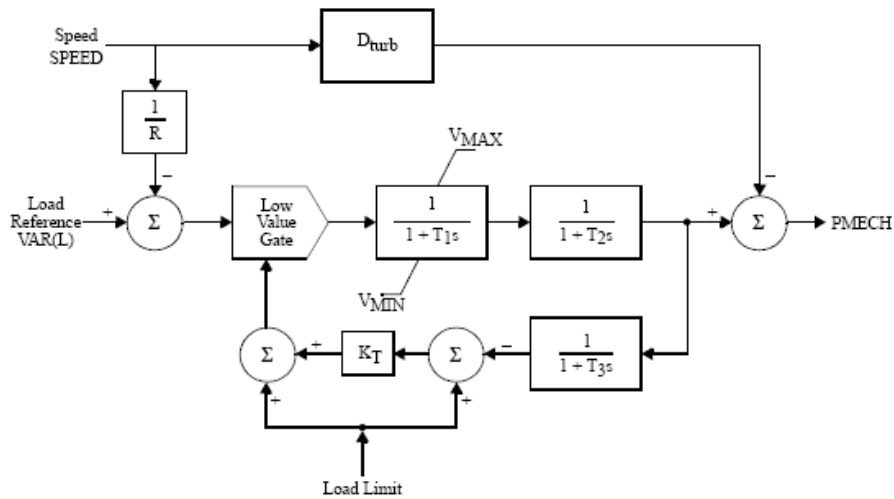


CONs	#	Value	Description
J			R (speed droop)
J+1			T <sub>1</sub> (->0) (sec)
J+2			T <sub>2</sub> (->0) (sec)
J+3			T <sub>3</sub> (->0) (sec)
J+4			Ambient temperature load limit, AT
J+5			K <sub>T</sub>
J+6			V <sub>MAX</sub>
J+7			V <sub>MIN</sub>
J+8			D <sub>turb</sub>

STATES	#	Description
K		Fuel valve
K+1		Fuel flow
K+2		Exhaust temperature

VAR	#	Description
L		Load reference

IBUS, 'GAST', I, R, T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, AT, K<sub>T</sub>, V<sub>MAX</sub>, V<sub>MIN</sub>, D<sub>turb</sub>/

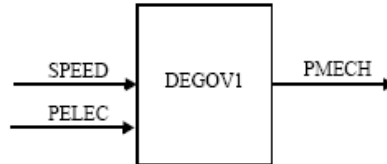


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DEGOV1

Woodward Diesel Governor

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and ICON # \_\_\_\_\_ M,  
and STATES starting with # \_\_\_\_\_ K,  
and VARs starting with # \_\_\_\_\_ L.



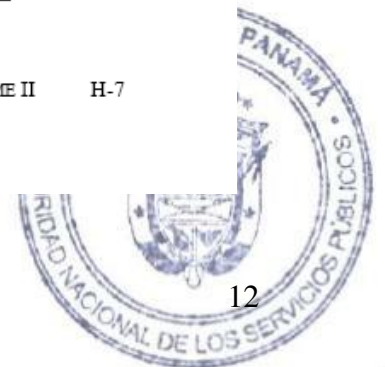
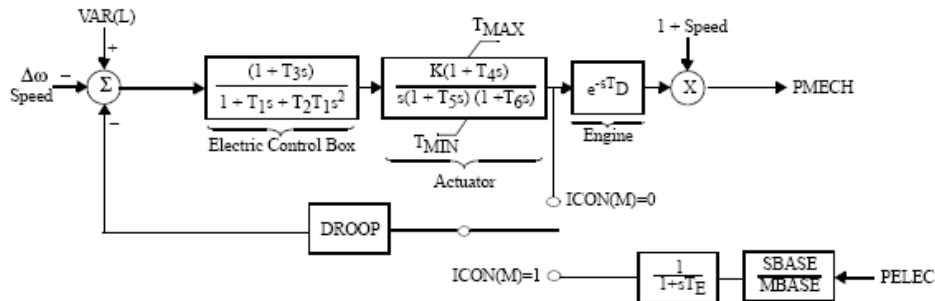
ICON	#	Value	Description
M			Droop control: 0 = Throttle feedback 1 = Electric power feedback

STATES	#	Description
K		Electric control box 1
K+1		Electric control box 2
K+2		Actuator 1
K+3		Actuator 2
K+4		Actuator 3
K+5		Power transducer

CONs	#	Value	Description
J			T <sub>1</sub> (sec)
J+1			T <sub>2</sub> (sec)
J+2			T <sub>3</sub> (sec)
J+3			K
J+4			T <sub>4</sub> (sec)
J+5			T <sub>5</sub> (sec)
J+6			T <sub>6</sub> (sec)
J+7			T <sub>D</sub> (0 ≤ T <sub>D</sub> ≤ 12 * DELT) (sec)
J+8			T <sub>MAX</sub>
J+9			T <sub>MIN</sub>
J+10			Droop
J+11			T <sub>E</sub>

VARs	#	Description
L		Reference
L+1		Delay table
.		
.		
.		
.		
.		
.		
.		
.		
L+13		

IBUS, 'DEGOV1', I, Droop Control, T<sub>1</sub>, T<sub>2</sub>, T<sub>3</sub>, K, T<sub>4</sub>, T<sub>5</sub>, T<sub>6</sub>, T<sub>D</sub>, T<sub>MAX</sub>, T<sub>MIN</sub>/, Droop, T<sub>E</sub>/



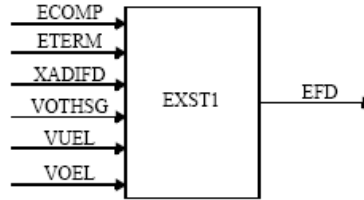
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# MODELOS DE EXCITADORES

## EXST1

### IEEE Type ST1 Excitation System

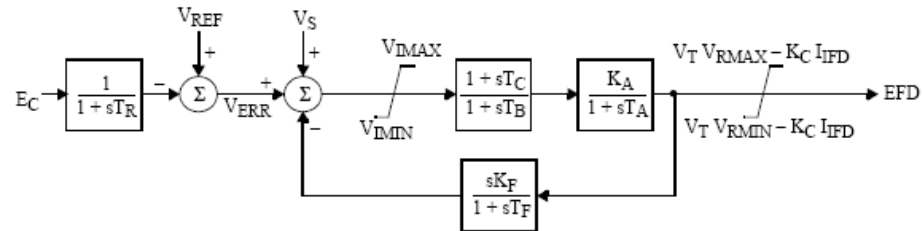
This model is located at system bus # \_\_\_\_\_ IBUS,  
 machine # \_\_\_\_\_ I.  
 This model uses CONs starting with # \_\_\_\_\_ J,  
 and STATEs starting with # \_\_\_\_\_ K.



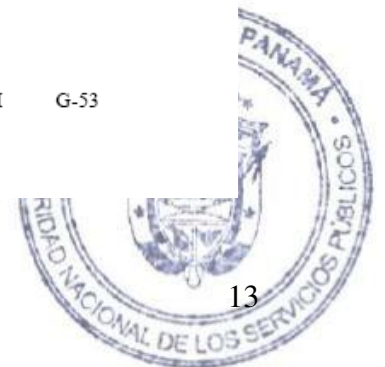
CONs	#	Value	Description
J			$T_R$
J+1			$V_{IMAX}$
J+2			$V_{IMIN}$
J+3			$T_C$
J+4			$T_B$ (sec)
J+5			$K_A$
J+6			$T_A$ (sec)
J+7			$V_{RMAX}$
J+8			$V_{RMIN}$
J+9			$K_C$
J+10			$K_F$
J+11			$T_F$ (> 0) (sec)

STATEs	#	Description
K		$V_{measured}$
K+1		Lead lag
K+2		$V_R$
K+3		Feedback

IBUS, 'EXST1', I,  $T_R$ ,  $V_{IMAX}$ ,  $V_{IMIN}$ ,  $T_C$ ,  $T_B$ ,  $K_A$ ,  $T_A$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $K_C$ ,  $K_F$ ,  $T_F$



$$V_S = VOTHSG + VUEL + VOEL$$

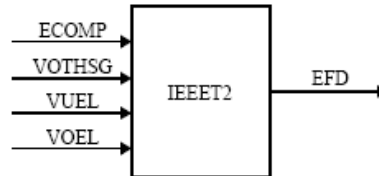


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**IEEE T2**

**IEEE Type 2 Excitation System**

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K,  
and VAR # \_\_\_\_\_ L.

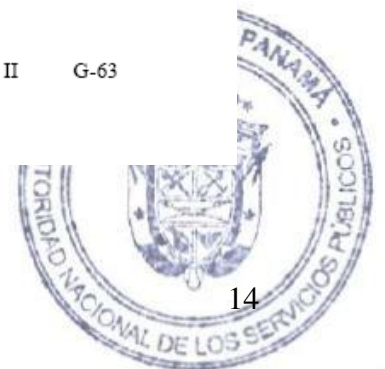


CONs	#	Value	Description
J			$T_R$ (sec)
J+1			$K_A$
J+2			$T_A$ (sec)
J+3			$V_{RMAX}$ or zero
J+4			$V_{RMIN}$
J+5			$K_E$
J+6			$T_E$ (>0) (sec)
J+7			$K_F$
J+8			$T_{F1}$ (>0) (sec)
J+9			$T_{F2}$ (>0) (sec)
J+10			$E_1$
J+11			$S_E(E_1)$
J+12			$E_2$
J+13			$S_E(E_2)$

STATEs	#	Description
K		Sensed $V_T$
K+1		Regulator output, $V_R$
K+2		Exciter output, EFD
K+3		First feedback integrator
K+4		Second feedback integrator

VARs	#	Description
L		$K_E$

IBUS, 'IEEE T2', I,  $T_R$ ,  $K_A$ ,  $T_A$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $K_E$ ,  $T_E$ ,  $K_F$ ,  $T_{F1}$ ,  $T_{F2}$ ,  $E_1$ ,  $S_E(E_1)$ ,  $E_2$ ,  $S_E(E_2)$

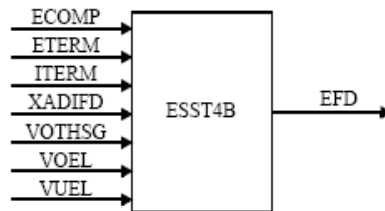


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**ESST4B**

**IEEE Type ST4B Potential or Compounded Source-Controlled Rectifier Exciter**

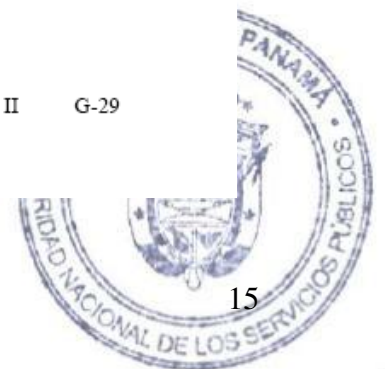
This model is located at system bus #\_\_\_\_\_ IBUS,  
machine #\_\_\_\_\_ I.  
This model uses CONs starting with #\_\_\_\_\_ J,  
and STATEs starting with #\_\_\_\_\_ K.



CONs	#	Value	Description
J			$T_R$ (sec)
J+1			$K_{PR}$
J+2			$K_{IR}$
J+3			$V_{RMAX}$
J+4			$V_{RMIN}$
J+5			$T_A$ (sec)
J+6			$K_{PM}$
J+7			$K_{IM}$
J+8			$V_{MMAX}$
J+9			$V_{MMIN}$
J+10			$K_G$
J+11			$K_P$
J+12			$K_I$
J+13			$V_{BMAX}$
J+14			$K_C$
J+15			$X_L$
J+16			THETAP

STATEs	#	Description
K		Sensed $V_T$
K+1		Regulator integrator
K+2		Regulator output, $V_R$
K+3		$V_M$

IBUS, 'ESST4B', I,  $T_R$ ,  $K_{PR}$ ,  $K_{IR}$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $T_A$ ,  $K_{PM}$ ,  $K_{IM}$ ,  $V_{MMAX}$ ,  $V_{MMIN}$ ,  $K_G$ ,  $K_P$ ,  $K_I$ ,  $V_{BMAX}$ ,  $K_C$ ,  $X_L$ , THETAP/

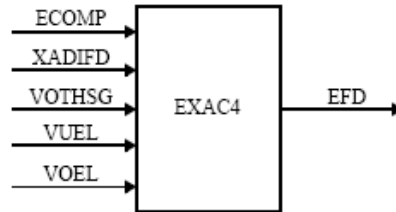


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**EXAC4**

**IEEE Type AC4 Excitation System**

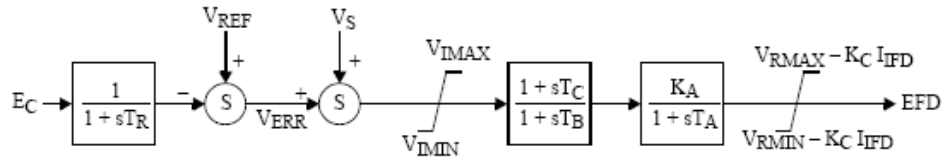
This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K.



CONs	#	Value	Description
J			$T_R$
J+1			$V_{MAX}$
J+2			$V_{MIN}$
J+3			$T_C$
J+4			$T_B$ (sec)
J+5			$K_A$
J+6			$T_A$
J+7			$V_{RMAX}$
J+8			$V_{RMIN}$
J+9			$K_C$

STATEs	#	Description
K		$V_{measured}$
K+1		Lead lag
K+2		$V_R$

IBUS, 'EXAC4', I,  $T_R$ ,  $V_{MAX}$ ,  $V_{MIN}$ ,  $T_C$ ,  $T_B$ ,  $K_A$ ,  $T_A$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $K_C$



$V_S = V_{OTHSG} + V_{UEL} + V_{OEL}$



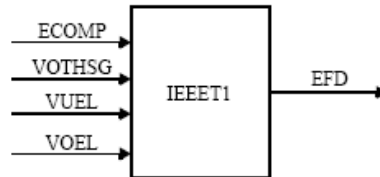
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**IEEE1**

**IEEE Type 1 Excitation System**

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K,  
and VAR # \_\_\_\_\_ L.

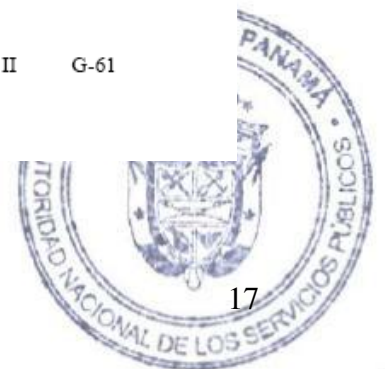


CONs	#	Value	Description
J			$T_R$ (sec)
J+1			$K_A$
J+2			$T_A$ (sec)
J+3			$V_{RMAX}$ or zero
J+4			$V_{RMIN}$
J+5			$K_E$ or zero
J+6			$T_E (>0)$ (sec)
J+7			$K_F$
J+8			$T_F (>0)$ (sec)
J+9		0	Switch
J+10			$E_1$
J+11			$S_E(E_1)$
J+12			$E_2$
J+13			$S_E(E_2)$

STATEs	#	Description
K		Sensed $V_T$
K+1		Regulator output, $V_R$
K+2		Exciter output, EFD
K+3		Rate feedback integrator

VAR	#	Description
L		$K_E$

IBUS, 'IEEE1', I,  $T_R$ ,  $K_A$ ,  $T_A$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $K_E$ ,  $T_E$ ,  $K_F$ ,  $T_F$ , 0,  $E_1$ ,  $S_E(E_1)$ ,  $E_2$ ,  $S_E(E_2)$

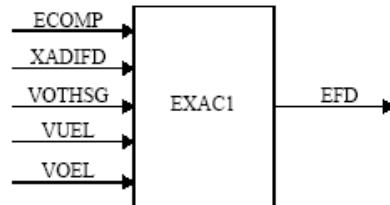


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**EXAC1**

**IEEE Type AC1 Excitation System**

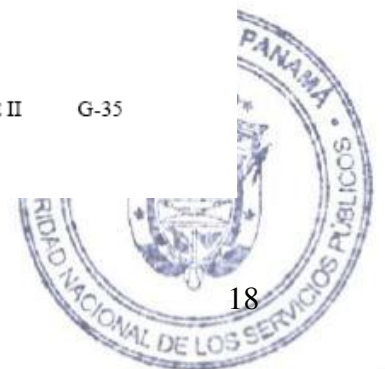
This model is located at system bus #\_\_\_\_\_ IBUS,  
machine #\_\_\_\_\_ I.  
This model uses CONs starting with #\_\_\_\_\_ J,  
and STATEs starting with #\_\_\_\_\_ K.



CONs	#	Value	Description
J			$T_R$ (sec)
J+1			$T_B$ (sec)
J+2			$T_C$ (sec)
J+3			$K_A$
J+4			$T_A$ (sec)
J+5			$V_{RMAX}$
J+6			$V_{RMIN}$
J+7			$T_E > 0$ (sec)
J+8			$K_F$
J+9			$T_F > 0$ (sec)
J+10			$K_C$
J+11			$K_D$
J+12			$K_E$
J+13			$E_1$
J+14			$S_E(E_1)$
J+15			$E_2$
J+16			$S_E(E_2)$

STATEs	#	Description
K		Sensed $E_T$
K+1		Lead lag
K+2		Regulator output
K+3		$V_E$
K+4		Feedback output

IBUS, 'EXAC1', I,  $T_R$ ,  $T_B$ ,  $T_C$ ,  $K_A$ ,  $T_A$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $T_E$ ,  $K_F$ ,  $T_F$ ,  $K_C$ ,  $K_D$ ,  $K_E$ ,  $E_1$ ,  $S_E(E_1)$ ,  $E_2$ ,  $S_E(E_2)$

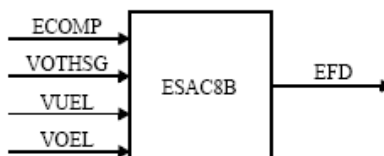


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ESAC8B

Basler DECS

This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATES starting with # \_\_\_\_\_ K,  
and VAR # \_\_\_\_\_ L.

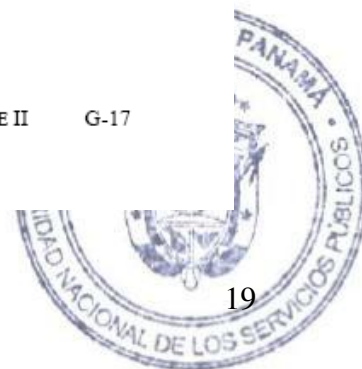
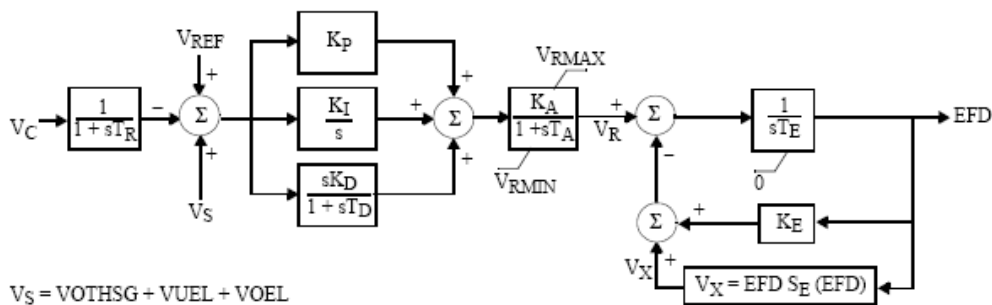


CONs	#	Value	Description
J		$T_R$ (sec)	
J+1		$K_P$	
J+2		$K_I$	
J+3		$K_D$	
J+4		$T_D$ (sec)	
J+5		$K_A$	
J+6		$T_A$	
J+7		$V_{RMAX}$ or zero	
J+8		$V_{RMIN}$	
J+9		$T_E > 0$ (sec)	
J+10		$K_E$ or zero	
J+11		$E_1$	
J+12		$S_E(E_1)$	
J+13		$E_2$	
J+14		$S_E(E_2)$	

STATES	#	Description
K		Sensed $V_T$
K+1		Integral controller
K+2		Derivative controller
K+3		Voltage regulator
K+4		Exciter output, EFD

VAR	#	Description
L		$K_E$

IBUS, 'ESAC8B', I,  $T_R$ ,  $K_P$ ,  $K_I$ ,  $K_D$ ,  $T_D$ ,  $K_A$ ,  $T_A$ ,  $V_{RMAX}$ ,  $V_{RMIN}$ ,  $T_E$ ,  $K_E$ ,  $E_1$ ,  $S_E(E_1)$ ,  $E_2$ ,  $S_E(E_2)$

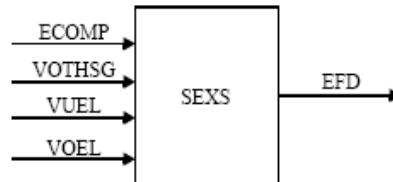


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SEXS

Simplified Excitation System

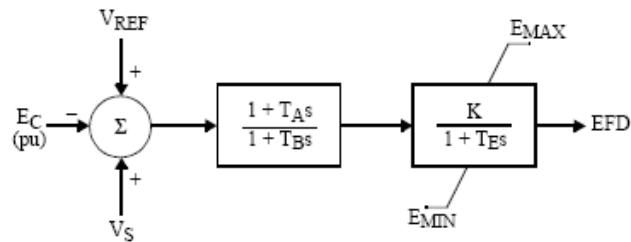
This model is located at system bus # \_\_\_\_\_ IBUS,  
machine # \_\_\_\_\_ I.  
This model uses CONs starting with # \_\_\_\_\_ J,  
and STATEs starting with # \_\_\_\_\_ K.



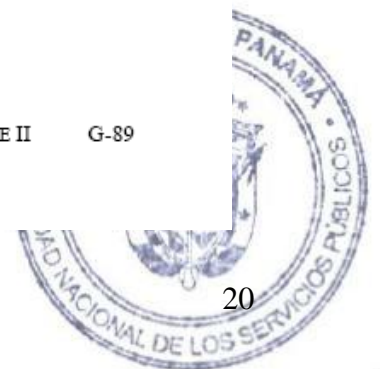
CONs	#	Value	Description
J			$T_A/T_B$
J+1			$T_B (>0)$ (sec)
J+2			K
J+3			$T_E$ (sec)
J+4			$E_{MIN}$ (pu on EFD base)
J+5			$E_{MAX}$ (pu on EFD base)

STATEs	#	Description
K		First integrator
K+1		Second integrator

IBUS, 'SEXS', I,  $T_A/T_B$ ,  $T_B$ , K,  $T_E$ ,  $E_{MIN}$ ,  $E_{MAX}$



$$V_S = VOTHSG + VUEL + VOEL$$



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# MODELOS DE ESTABILIZADORES

STABILIZER AND EXCITATION LIMITER MODEL DATA SHEETS

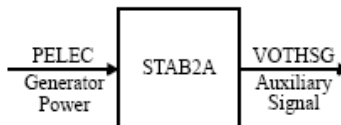
Power Technologies, Inc.

STAB2A

## STAB2A

### Power Sensitive Stabilizing Unit (ASEA)

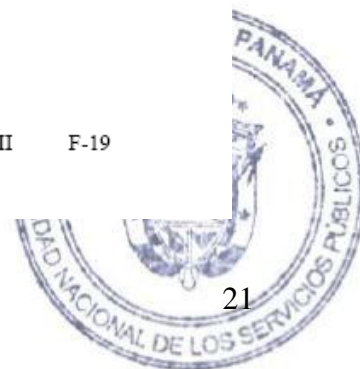
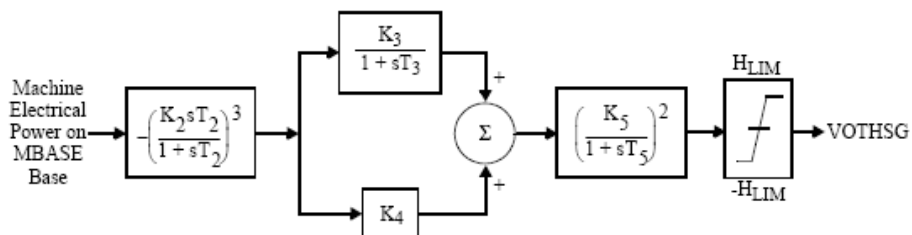
This model is located at system bus # \_\_\_\_\_ IBUS,  
 machine # \_\_\_\_\_ I.  
 This model uses CONs starting with # \_\_\_\_\_ J,  
 and STATEs starting with # \_\_\_\_\_ K.



CONs	#	Value	Description
J		$K_2$	
J+1		$T_2$ (sec) ( $\neq 0$ )	
J+2		$K_3$	
J+3		$T_3$ (sec) ( $\neq 0$ )	
J+4		$K_4$	
J+5		$K_5$	
J+6		$T_5$ (sec) ( $\neq 0$ )	
J+7		$H_{LIM}$	

STATEs	#	Description
K		Implicit
K+1		Integration
K+2		State
K+3		Variables

IBUS, 'STAB2A', I,  $K_2$ ,  $T_2$ ,  $K_3$ ,  $T_3$ ,  $K_4$ ,  $K_5$ ,  $T_5$ ,  $H_{LIM}$



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# MODELOS DE RELEVADORES

LOAD CHARACTERISTIC AND LOAD RELAY MODEL DATA SHEETS

Power Technologies, Inc.

LDSHxx

## LDSHBL, LDSHOW, LDSHZN, LDSHAR, LDSHAL

### Underfrequency Load Shedding Model

DYRE Data Record:

I, 'LDSHxx', LID  $f_1$ ,  $t_1$ ,  $frac_1$ ,  $f_2$ ,  $t_2$ ,  $frac_2$ ,  $f_3$ ,  $t_3$ ,  $frac_3$ ,  $T_b$  /

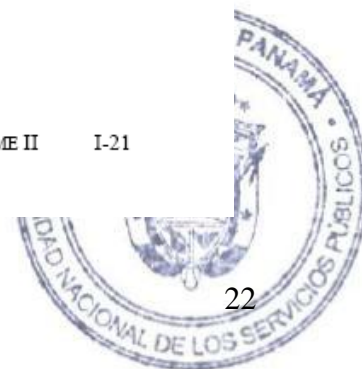
LID is an explicit load identifier or may be '\*' for application to loads of any ID associated with the subsystem type.

Model suffix "xx"	"I" Description
BL	Bus number
OW	Owner number
ZN	Zone number
AR	Area number
AL	0

CONs	Value	Description
J		$f_1$ , first load shedding point (Hz)
J+1		$t_1$ , first point pickup time (sec)
J+2		$frac_1$ , first fraction of load to be shed
J+3		$f_2$ , second load shedding point (Hz)
J+4		$t_2$ , second fraction pickup time (sec)
J+5		$frac_2$ , second fraction of load to be shed
J+6		$f_3$ , third load shedding point (Hz)
J+7		$t_3$ , third point pickup time (sec)
J+8		$frac_3$ , third fraction of load to be shed
J+9		$T_b$ , breaker time (sec)

Reserved ICONs	Description
N	First point delay flag
N+1	First point time-out flag
N+2	First timer status
N+3	Second point delay flag
N+4	Second point time-out flag
N+5	Second timer status
N+6	Third point delay flag
N+7	Third point time-out flag
N+8	Third timer status

VARs	Description
L	First timer memory
L+1	Second timer memory
L+2	Third timer memory



*Handwritten signature*

**LVSHBL, LVSHOW, LVSHZN, LVSHAR, LVSHAL**

**Undervoltage Load Shedding Model**

DYRE Data Record:

I, 'LVSHxx', LID, JBUS, V1, T1, F1, V2, T2, F2, V3, T3, F3, TB/

LID is an explicit load identifier or may be '\*' for application to loads of any ID associated with the subsystem type.

Model suffix "xx"	"I" Description
BL	Bus number
OW	Owner number
ZN	Zone number
AR	Area number
AL	0

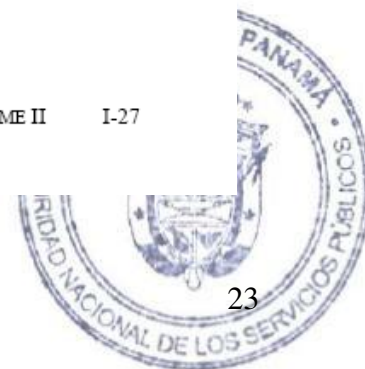
ICONs	Value	Description
M		JBUS, remote bus number where voltage is measured*

\* Set JBUS = 0, if remote bus is same as the local bus to which the load is connected.

CONs	Value	Description
J		V1, first load shedding point (pu)
J+1		T1, first point pickup time (sec)
J+2		F1, first fraction of load to be shed
J+3		V2, second load shedding point (pu)
J+4		T2, second fraction pickup time (sec)
J+5		F2, second fraction of load to be shed
J+6		V3, third load shedding point (pu)
J+7		T3, third point pickup time (sec)
J+8		F3, third fraction of load to be shed
J+9		TB, breaker time (sec)

VARs	Description
L	First timer memory
L+1	Second timer memory
L+2	Third timer memory

Reserved ICONs	Description
N	First point delay flag
N+1	First point time-out flag
N+2	First timer status
N+3	Second point delay flag
N+4	Second point time-out flag
N+5	Second timer status
N+6	Third point delay flag
N+7	Third point time-out flag
N+8	Third timer status



*Handwritten signature or initials.*