

Ni·Cd *Baterías* *Batteries*

Elementos con recipientes de plástico (polipropileno)
Baterías con placas de bolsas

Polypropylene cell ranges
Pocket plate batteries

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Emisa



Baterías de Níquel Cadmio con placas de bolsas

Pocket plate

Nickel-Cadmium batteries

CARACTERISTICAS GENERALES GENERAL CHARACTERISTICS

Elementos de baja intensidad de descarga series LP

Los elementos de esta gama están especialmente diseñados para uso general y aplicaciones estacionarias, donde la descarga no es muy frecuente pero se produce durante periodos largos de tiempo.

La condición de funcionamiento típica es en carga de flotación, por lo tanto es idealmente apropiada para aplicaciones tales como alarmas contra incendios, sistemas fotovoltaicos, telecomunicaciones y señalización ferroviaria.

Low discharge rate cells LP range

Cells within this range are specially designed for general purpose and stand-by applications, where discharge is not frequent and made during long periods.

The typical operation condition is on floating charge, thus ideally suited for applications such as fire alarms, photovoltaic systems, telecommunications and railroad signalling.

Elementos de media intensidad de descarga series MP

Los elementos de media intensidad de descarga de EMISA son apropiados para periodos de descarga media entre 30 minutos y 5 horas, siendo ideales tanto para las aplicaciones estacionarias como para U.P.S.

El suministro de energía para plataformas petrolíferas y marinas, así como para el control de turbinas de gas y ferrocarril (iluminación y aire acondicionado) son aplicaciones típicas para esta gama de elementos.

Medium discharge rate cells MP range

EMISA's medium discharge rate cells are suitable for medium discharge periods between 30 minutes and 5 hours, being ideal for both stand-by and UPS applications.

Offshore and marine power supply, as well as gas turbine control and railway duties (lighting and air conditioning) are also typical applications for this cell range.

Elementos de alta intensidad de descarga series HP

Elementos con un diseño de placa especial para alcanzar un mejor comportamiento y altas prestaciones gracias al incremento de la superficie de la materia activa. El disparo y cierre de interruptores, UPS y arranque de motores son aplicaciones ideales de esta serie. Es la gama más apropiada para cortos periodos de descarga (de 1 a 60 minutos) con corrientes de descarga muy altas.

High discharge rate cells HP range

Cells with a special plate design to achieve a higher performance through increased active material active surface. Switchgear tripping and closing, UPS, as well as engine starting are ideal applications for this high performance cell range. Best suitable for very short discharge periods (1 to 60 minutes) at very high discharge currents.

Este catálogo anula y sustituye a todas las ediciones anteriores.
Este catálogo y su contenido podrá ser modificado parcial o totalmente sin previo aviso.
Todas las cifras y datos contenidos en el mismo están sujetos a las tolerancias normales de fabricación. Las cifras y datos no podrán ser tomadas como un compromiso contractual.

*This brochure replaces and substitutes all previously edited catalogues. This catalogue and its contents may be changed partially and in total without any prior notice.
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Las baterías de Níquel-Cadmio de EMISA pueden ser colocadas tanto en bancadas de acero como de madera y están diseñadas para reducir el mantenimiento y espacio necesarios, así como para proporcionar una mayor resistencia mecánica contra golpes y vibraciones.

Bajo petición, los elementos pueden ser suministrados con válvulas retardantes de la llama y/o recipientes ignífugos para proporcionar más seguridad en aquellas instalaciones donde las condiciones ambientales de funcionamiento sean críticas.

Nuestros ingenieros de diseño aconsejan la disposición más adecuada para cada aplicación en particular.

Para elementos con recipiente de acero inoxidable, contacte con nosotros.

EMISA's Nickel-Cadmium batteries can be arranged on either steel or wooden stands which are designed to minimize maintenance requirements and space and to withstand supplementary mechanical strength or additional shock or vibration resistance.

On request, the cells can be fitted with flame arresting vent plugs, and/or flame retardant cases, to provide special safety conditions in environmentally critical installations.

Our design engineers will advise the most suitable layout for each particular application.

For cells with stainless steel containers, please contact us.

Tapón / Plug

Terminal / Terminal

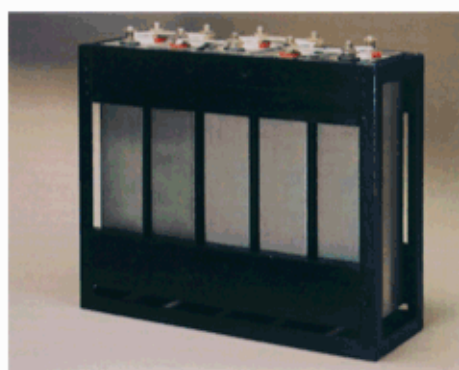
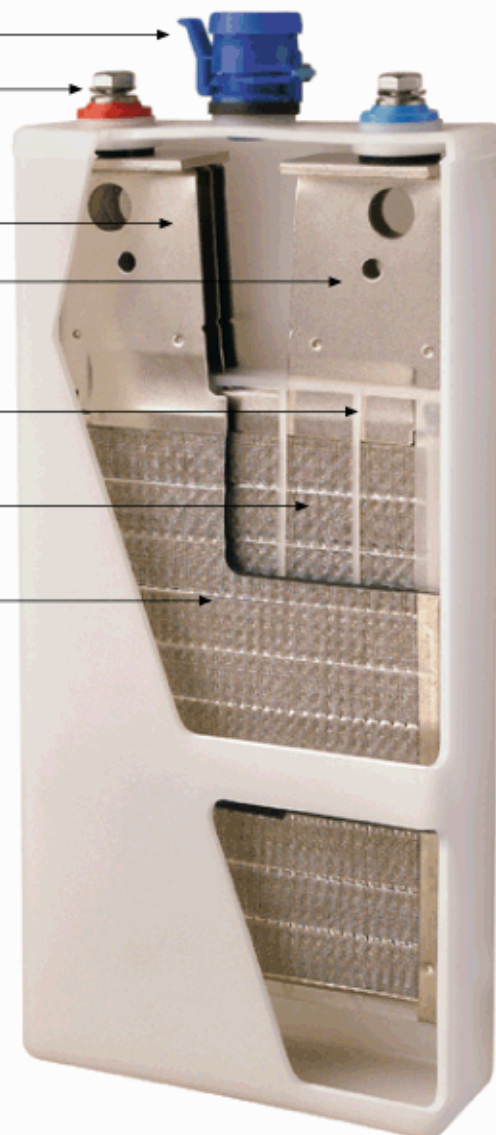
Conexión positiva / Positive tab

Conexión negativa / Negative tab

Separador de rejillas / Separating grids

Placa negativa / Negative plate

Placa positiva / Positive plate



1. Tensiones típicas de funcionamiento de elementos de Níquel-Cadmio de placas de bolsa.

Operating voltages for pocket-plate Nickel-Cadmium cell

TENSIONES POR ELEMENTO / CELL VOLTAGES	TENSIONES DE FUNCIONAMIENTO / OPERATING VOLTAGES
1.80 a 1.55 / 1.80 to 1.55	Tensión de carga rápida / Boost voltage
1.55 a 1.47 / 1.55 to 1.47	Auto carga / Auto boost
1.47 a 1.40 / 1.47 to 1.40	Tensión de flotación / Float voltage rate
1.28	Tensión de circuito abierto / Open circuit voltage
1.20	Tensión nominal / Nominal voltage
0.85	Tensión de arranque / Cranking voltage
0.65	Tensión de embalamiento / Breakaway voltage

2. Procedimientos usuales de carga

Usual charging procedures

A) Carga a intensidad constante / constant current charging

Tipo de elementos Cells range	Carga total Full charge	Carga eficaz Efficient charge	Carga rápida Boost charge
LP - MP	C/5 durante 10 horas C/5 for 10 hours	C/5 durante 7 horas C/5 for 7 hours	C/3 durante 4 horas C/3 for 4 hours
HP	C/5 durante 8 horas C/5 for 8 hours	C/4 durante 5 horas C/4 for 5 hours	C/2 durante 2.5 horas C/2 for 2.5 hours

B) Carga a tensión constante / constant voltage charging

Tipo de elementos Cells range	Tensión de flotación mínima Floating voltage	Tensión de flotación automática Normal voltage
LP - MP	1.41 - 1.47 V./elemento / Volts/cell	1.47 - 1.55 V./elemento / Volts/cell
HP	1.40 - 1.45 V./elemento / Volts/cell	1.45 - 1.52 V./elemento / Volts/cell

3. Máxima intensidad de cortocircuito / Maximum short circuit current

LP	MP	HP
10 x C	15 x C	20 x C

4. Selección general de los tipos de elementos

General selection of the cells range

	HP		MP		LP	
1.16						
1.14						
1.12						
1.10						
1.08						
1.06						
1.04						
1.02						
1.00						
	15 m	30 m	1 h	1.5 h	2 h	3 h 5 h

DIMENSIONES Y CAPACIDADES

Elementos de placas embolsadas en recipiente de plástico

CAPACITIES AND DIMENSIONS

Pocket plate cells in plastic containers

Tipo de elementos <i>Type of cells</i>	Capacidad nominal <i>Nominal capacity</i> (Ah)	Dimensiones de elemento (mm) <i>Cell dimensions</i>			Peso de elemento (lleno) <i>Cell weight (filled)</i> (Kg)	Reserva de electrolito <i>Electrolyte reserve</i> (cm ³)	Número y tamaño de terminales <i>Number and size of Terminals</i>
		L	W	H			
LP11	11	41	115	189	1,1	120	2xM10
LP17	19	55	115	240	1,9	145	2xM10
LP28	29	55	115	240	2,1	145	2xM10
LP37	39	64	115	240	2,4	170	2xM10
LP46	49	75	115	240	2,9	205	2xM10
LP56	60	75	115	240	3,0	205	2xM10
LP65	69	75	115	240	3,2	205	2xM10
LP80	76	58	139	402	5,5	390	2xM20
LP95	89	58	139	402	5,7	380	2xM20
LP105	102	58	139	402	6,1	380	2xM20
LP135	128	75	139	402	7,3	530	2xM20
LP165	157	103	165	402	10,3	960	2xM20
LP200	189	103	165	402	10,7	940	2xM20
LP230	221	103	165	402	11,2	935	2xM20
LP265	252	103	165	402	11,7	920	2xM20
LP300	284	128	165	402	14,8	1150	4xM20
LP330	316	128	165	402	15,3	1135	4xM20
LP365	347	156	165	402	17,6	1430	4xM20
LP400	379	156	165	402	18,1	1415	4xM20
LP430	411	156	165	402	18,7	1405	4xM20
MP12	11	46	87	287	1,7	115	2xM10
MP18	18	46	87	287	1,9	110	2xM10
MP25	25	46	87	287	2,0	105	2xM10
MP30	32	86	87	287	3,0	230	2xM10
MP37	38	86	87	287	3,2	225	2xM10
MP50	53	86	87	287	3,6	210	2xM10
MP55	59	86	87	287	3,7	205	2xM10
MP64	65	58	139	402	5,3	390	2xM20
MP80	83	58	139	402	5,7	380	2xM20
MP95	101	75	139	402	6,9	525	2xM20
MP115	118	75	139	402	7,3	510	2xM20
MP140	145	103	165	402	10,3	925	2xM20
MP160	167	103	165	402	10,8	910	2xM20
MP180	189	103	165	402	11,3	890	2xM20
MP200	211	103	165	402	11,7	875	2xM20
MP220	232	128	165	402	14,6	1125	4xM20
MP240	254	128	165	402	15,0	1105	4xM20
MP260	276	128	165	402	15,4	1090	4xM20
MP280	298	156	165	402	17,4	1375	4xM20
MP300	298	156	165	402	17,4	1375	4xM20
MP320	319	156	165	402	17,8	1360	4xM20
MP360	341	156	165	402	18,2	1345	4xM20
HP10	11	46	87	257	1,7	105	2xM10
HP14	14	46	87	287	1,9	100	2xM10
HP20	22	46	87	287	2,2	95	2xM10
HP30	34	86	87	287	3,5	205	2xM10
HP40	38	86	87	287	3,7	195	2xM10
HP50	50	86	87	287	4,1	185	2xM10
HP65	67	58	139	362	6,0	350	2xM20
HP80	85	75	139	362	7,3	485	2xM20
HP100	102	105	139	362	8,8	730	2xM20
HP125	128	105	139	362	9,5	700	2xM20
HP150	147	128	165	362	14,0	1095	4xM20
HP185	190	128	165	362	14,9	1055	4xM20
HP215	211	128	165	362	15,4	1030	4xM20
HP235	244	156	165	362	18,0	1295	4xM20
HP250	254	156	165	362	18,2	1285	4xM20
HP275	265	156	165	362	18,5	1270	4xM20

Todas las cifras y datos contenidos en este catálogo están sujetas a las tolerancias de fabricación normales. Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual. Las capacidades nominales están indicadas para un tiempo de descarga de 5 horas hasta una tensión final de 1.00 voltio por elemento, para elementos totalmente cargados a 20°C. Los elementos de Níquel Cadmio de placas embolsadas de EMISA están fabricados bajo la norma IEC-623.

All figures and data contained in this catalogue are subject to normal manufacturing tolerances. None of the figures shown in this brochure can be taken as a contractual commitment.

The nominal capacities are indicated at the 5 hour discharge rate up to an end voltage of 1.00 Volts per cell, for full charged cells at 20°C. EMISA's Pocket Plate Nickel-Cadmium cells are made under IEC-623 standard.

SERIE LP / LP RANGE

Tablas de descarga en amperios (20°C) Amperes tabular discharge data (20°C)

Los datos de descarga indicados son para elementos plenamente cargados, después de permanecer en circuito abierto durante 1 hora, permitiéndose caídas de tensión en las conexiones.
Discharge data for full charged cells after 1 hour open circuit, allowing voltage losses on connections.

Hasta 1.00 V. por elemento / To 1.00 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	10min	5min	1min	10s	1s
LP11	1,1	1,4	2,2	3,5	5,0	6,2	7,7	10,0	12,9	14,5	17,7	21,4	25,9
LP17	1,9	2,4	3,8	6,1	8,6	10,6	13,3	17,0	22,3	25,0	30,5	37	44,7
LP28	2,9	3,7	5,8	9,3	13,1	16,2	20,3	26,7	34,0	38,1	46,6	56,5	68,3
LP37	3,9	4,9	7,8	12,5	17,6	21,8	27,3	35,9	45,5	51,3	62,9	76,8	93,6
LP46	4,9	6,2	9,8	15,7	22,1	27,4	34,3	45,1	59,8	67,7	80,0	96,6	120,0
LP56	6,1	7,6	12,0	19,2	27,0	33,6	42,0	55,2	72,5	81,8	96,5	115,0	138,0
LP65	7,0	8,7	13,8	22,1	31,1	38,6	48,3	63,5	83,8	94,6	111,0	131,0	157,0
LP80	7,8	9,6	15,2	24,6	35,3	44,5	57,0	73,7	94,2	105,0	135,0	156,0	177,0
LP95	9,1	11,3	17,8	28,8	41,3	52,1	66,8	86,3	110,0	123,0	158,0	183,0	204,0
LP105	10,4	12,9	20,4	33,0	47,4	59,7	76,5	98,9	126,0	141,0	181,0	209,0	231,0
LP135	13,1	16,2	25,6	41,4	59,4	75,0	96,0	124,0	159,0	177,0	227,0	263,0	285,0
LP165	16,0	19,9	31,4	50,8	72,9	91,9	118,0	152,0	195,0	217,0	278,0	322,0	350,0
LP200	19,3	23,9	37,8	61,1	87,8	111,0	142,0	183,0	234,0	261,0	335,0	388,0	421,0
LP230	22,5	28,0	44,2	71,5	103,0	129,0	166,0	214,0	274,0	305,0	391,0	454,0	493,0
LP265	25,7	31,9	50,4	81,5	117,0	148,0	189,0	244,0	312,0	348,0	446,0	517,0	562,0
LP300	29,0	36,0	56,8	91,8	132,0	166,0	213,0	275,0	352,0	392,0	503,0	583,0	633,0
LP330	32,2	40,0	63,2	102,0	147,0	185,0	237,0	307,0	392,0	436,0	559,0	649,0	705,0
LP365	35,4	44,0	69,4	112,0	161,0	203,0	260,0	337,0	430,0	479,0	614,0	713,0	774,0
LP400	38,7	48,0	75,8	123,0	176,0	222,0	284,0	368,0	470,0	523,0	671,0	778,0	845,0
LP430	41,9	52,1	82,2	133,0	191,0	241,0	308,0	399,0	510,0	567,0	727,0	844,0	917,0

Hasta 1.05 V. por elemento / To 1.05 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	10min	5min	1min	10s	1s
LP11	1,1	1,4	2,2	3,4	4,8	5,8	7,3	9,2	11,0	12,2	15,0	18,4	22,2
LP17	1,9	2,4	3,7	5,9	8,3	10,1	12,5	15,9	18,9	21,0	25,9	31,7	38,3
LP28	2,9	3,6	5,7	9,0	12,6	15,4	19,1	24,3	28,9	32,1	39,5	48,4	58,4
LP37	3,9	4,8	7,6	12,2	17,0	20,7	25,7	33,1	40,2	44,0	52,8	65,4	79,6
LP46	4,9	6,1	9,6	15,3	21,3	26,0	32,3	42,2	51,5	57,3	67,9	82,7	102,0
LP56	6,0	7,4	11,8	18,7	26,1	31,8	39,6	51,0	61,5	69,0	81,5	97,9	118,0
LP65	6,9	8,6	13,5	21,5	30,0	36,6	45,5	58,0	72,0	78,9	94,0	113,0	133,0
LP80	7,7	9,5	15,0	24,2	34,2	42,4	51,7	65,4	82,5	92,7	118,0	135,0	151,0
LP95	9,0	11,2	17,6	28,3	40,1	49,6	60,5	76,5	96,6	109,0	138,0	159,0	177,0
LP105	10,3	12,8	20,2	32,4	45,9	56,9	69,4	87,7	111,0	124,0	158,0	182,0	203,0
LP135	12,9	16,1	25,3	40,7	57,6	71,4	87,0	110,0	139,0	156,0	198,0	228,0	255,0
LP165	15,9	19,7	31,1	49,9	70,7	87,6	107,0	135,0	170,0	192,0	243,0	280,0	312,0
LP200	19,1	23,7	37,4	60,1	85,1	105,0	129,0	163,0	205,0	231,0	293,0	337,0	376,0
LP230	22,3	27,7	43,7	70,2	99,5	123,0	150,0	190,0	240,0	270,0	343,0	394,0	440,0
LP265	25,5	31,6	49,8	80,1	113,0	141,0	171,0	217,0	273,0	307,0	391,0	449,0	501,0
LP300	28,7	35,7	56,2	90,2	128,0	158,0	193,0	244,0	308,0	346,0	440,0	506,0	565,0
LP330	31,9	39,7	62,5	100,0	142,0	176,0	215,0	272,0	343,0	386,0	490,0	563,0	629,0
LP365	35,0	43,6	68,6	110,0	156,0	194,0	236,0	298,0	376,0	423,0	538,0	618,0	691,0
LP400	38,3	47,6	75,0	120,0	171,0	211,0	258,0	326,0	411,0	462,0	588,0	675,0	754,0
LP430	41,5	51,6	81,3	131,0	185,0	229,0	279,0	353,0	446,0	501,0	637,0	732,0	818,0

Hasta 1.10 V. por elemento / To 1.10 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	10min	5min	1min	10s	1s
LP11	1,1	1,3	2,1	3,4	4,6	5,6	6,9	8,4	9,6	10,1	12,3	15,2	18,4
LP17	1,9	2,3	3,7	5,8	8,0	9,5	11,5	13,5	16,1	17,5	21,3	26,3	31,7
LP28	2,8	3,5	5,6	8,9	12,2	14,8	18,3	22,2	25,3	26,7	32,5	40,2	48,4
LP37	3,8	4,8	7,5	12,0	16,4	19,9	24,5	30,4	35,0	36,3	43,6	53,8	65,1
LP46	4,8	6,0	9,5	15,0	20,6	25,0	31,0	39,0	45,0	47,3	55,1	68,1	82,6
LP56	5,9	7,3	11,6	18,4	25,2	30,6	37,5	46,5	54,0	57,3	66,6	81,0	97,4
LP65	6,8	8,4	13,3	21,2	29,0	35,2	43,0	52,0	60,0	65,0	76,6	93,3	111,0
LP80	7,6	9,5	14,8	23,4	32,3	38,2	44,8	56,2	69,3	79,0	101,0	114,0	128,0
LP95	8,9	11,1	17,3	27,4	37,8	44,7	52,5	65,9	81,1	92,6	118,0	133,0	147,0
LP105	10,2	12,7	19,8	31,4	43,3	51,2	60,2	75,5	93,0	106,0	136,0	153,0	166,0
LP135	12,8	15,9	24,9	39,4	54,3	64,3	75,5	94,7	117,0	133,0	170,0	192,0	202,0
LP165	15,7	19,5	30,5	48,3	66,6	78,8	92,6	116,0	143,0	163,0	209,0	235,0	247,0
LP200	18,9	23,5	36,8	58,2	80,2	94,9	112,0	140,0	172,0	197,0	251,0	283,0	297,0
LP230	22,1	27,5	43,0	68,0	93,8	111,0	130,0	164,0	201,0	230,0	294,0	331,0	347,0
LP265	25,2	31,4	49,0	77,6	107,0	127,0	149,0	186,0	230,0	262,0	335,0	377,0	396,0
LP300	28,4	35,3	55,2	87,4	121,0	143,0	168,0	210,0	259,0	295,0	378,0	425,0	446,0
LP330	31,6	39,3	61,4	97,3	134,0	159,0	186,0	234,0	288,0	329,0	420,0	473,0	496,0
LP365	34,7	43,2	67,5	107,0	147,0	174,0	205,0	257,0	316,0	361,0	462,0	519,0	545,0
LP400	37,9	47,2	73,7	117,0	161,0	190,0	224,0	280,0	345,0	394,0	504,0	567,0	595,0
LP430	41,1	51,1	79,9	126,0	174,0	206,0	242,0	304,0	375,0	427,0	547,0	615,0	645,0

Hasta 1.14 V. por elemento / To 1.14 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	10min	5min	1min	10s	1s
LP11	1,0	1,3	2,0	2,9	3,7	4,3	5,1	6,2	7,2	8,2	10,2	12,8	15,2
LP17	1,8	2,2	3,4	5,0	6,3	7,4	8,8	10,7	12,5	14,2	17,6	22,1	26,3
LP28	2,7	3,4	5,1	7,6	9,7	11,3	13,4	16,3	19,1	21,7	26,9	33,7	40,2
LP37	3,6	4,5	6,9	10,2	13,0	15,2	18,0	21,7	25,9	29,8	36,7	44,4	53,1
LP46	4,6	5,7	8,7	12,8	16,3	19,2	22,7	27,8	33,7	38,6	46,4	56,5	67,2
LP56	5,6	7,0	10,7	15,7	20,0	23,5	27,5	33,6	40,6	46,5	54,7	67,5	80,7
LP65	6,5	8,0	12,3	18,0	23,0	27,0	32,0	39,2	46,5	53,4	63,8	78,2	92,6
LP80	7,5	9,2	14,4	22,5	28,9	33,1	38,8	47,9	58,7	67,0	86,6	98,0	107,0
LP95	8,7	10,8	16,8	26,4	33,8	38,8	45,4	56,1	68,8	78,5	101,0	115,0	123,0
LP105	10,0	12,4	19,3	30,3	38,8	44,4	52,0	64,3	78,8	90,0	116,0	132,0	139,0
LP135	12,5	15,5	24,2	38,0	48,6	55,8	65,3	80,6	98,9	113,0	146,0	165,0	173,0
LP165	15,4	19,0	29,7	46,6	59,7	68,4	80,1	98,9	121,0	138,0	179,0	203,0	212,0
LP200	18,5	22,9	35,7	56,1	71,8	82,3	96,4	119,0	146,0	167,0	215,0	244,0	255,0
LP230	21,7	26,8	41,7	65,6	84,0	96,3	113,0	139,0	171,0	195,0	252,0	285,0	298,0
LP265	24,7	30,5	47,6	74,8	95,8	110,0	129,0	159,0	195,0	222,0	287,0	325,0	340,0
LP300	27,8	34,4	53,6	84,3	108,0	124,0	145,0	179,0	219,0	250,0	324,0	366,0	383,0
LP330	31,0	38,3	59,7	93,7	120,0	138,0	161,0	199,0	244,0	279,0	360,0	408,0	427,0
LP365	34,0	42,0	65,5	103	132,0	151,0	177,0	219,0	268,0	306,0	396,0	448,0	468,0
LP400	37,1	45,9	71,6	112	144,0	165,0	193,0	239,0	293,0	334,0	432,0	489,0	512,0
LP430	40,3	49,8	77,6	122	156,0	179,0	210,0	259,0	318,0	363,0	469,0	530,0	555,0

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
All data contained in this brochure are subject to usual manufacturing tolerances.

Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
None of the figures herein contained can be considered as a contractual commitment.

SERIE MP / MP RANGE

Tablas de descarga en amperios (20°C) Amperes tabular discharge data (20°C)

Los datos de descarga indicados son para elementos plenamente cargados, después de permanecer en circuito abierto durante 1 hora, permitiéndose caídas de tensión en las conexiones.
Discharge data for full charged cells after 1 hour open circuit, allowing voltage losses on connections.

Hasta 1.00 V. por elemento / To 1.00 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	15min	10min	5min	1min	30s	1s
MP12	1,4	2,2	3,6	5,2	6,7	9,4	14,9	18,9	21,1	24,0	30,4	34,4	46,1
MP18	2,3	3,6	5,9	8,6	11,0	15,3	24,3	31,0	34,6	39,2	49,7	56,4	75,4
MP25	3,2	5,0	8,2	11,9	15,3	21,3	33,8	43,0	48,0	55,2	69,0	78,3	105,0
MP30	4,1	6,4	10,5	15,2	19,6	27,2	43,2	55,0	61,4	69,8	88,4	100,0	134,0
MP37	4,8	7,6	12,4	18,1	23,3	32,3	51,3	65,4	73,0	82,8	105,0	119,0	159,0
MP50	6,7	10,6	17,3	25,2	32,5	45,1	71,6	91,2	102,0	116,0	146,0	166,0	222,0
MP55	7,5	11,8	19,3	28,1	36,2	50,2	79,7	101,0	113,0	129,0	163,0	185,0	247,0
MP64	8,2	13,0	21,2	31,1	40,3	55,4	87,7	110,0	121,0	130,0	173,0	192,0	253,0
MP80	10,5	16,6	27,1	39,7	51,4	70,7	112,0	141,0	154,0	166,0	221,0	246,0	297,0
MP95	12,8	20,2	33,0	48,3	62,6	86,1	136,0	172,0	187,0	202,0	269,0	299,0	362,0
MP115	15,0	23,6	38,6	56,5	73,1	101,0	159,0	201,0	218,0	236,0	315,0	349,0	423,0
MP140	18,4	29,0	47,4	69,4	89,8	124,0	189,0	239,0	254,0	291,0	387,0	429,0	520,0
MP160	21,2	33,4	54,6	79,9	103,0	142,0	217,0	276,0	292,0	335,0	446,0	494,0	598,0
MP180	24,0	37,8	61,8	90,5	117,0	161,0	246,0	312,0	331,0	379,0	504,0	559,0	677,0
MP200	26,8	42,2	69,0	101,0	131,0	180,0	274,0	348,0	369,0	423,0	563,0	624,0	756,0
MP220	29,4	46,4	75,8	111,0	144,0	198,0	302,0	383,0	406,0	465,0	619,0	686,0	831,0
MP240	32,2	50,8	83,0	122,0	157,0	216,0	330,0	419,0	445,0	509,0	678,0	751,0	910,0
MP260	35,0	55,2	90,2	132,0	171,0	235,0	359,0	455,0	483,0	553,0	736,0	816,0	989,0
MP280	36,5	58,8	96,5	140,0	180,0	250,0	377,0	482,0	512,0	587,0	785,0	871,0	1060,0
MP300	37,8	59,6	97,4	143,0	185,0	254,0	387,0	492,0	522,0	597,0	795,0	881,0	1070,0
MP320	40,5	63,8	104,0	153,0	198,0	272,0	415,0	526,0	558,0	639,0	851,0	944,0	1140,0
MP360	43,3	68,2	111,0	163,0	211,0	291,0	443,0	563,0	597,0	683,0	910,0	1010,0	1220,0

Hasta 1.05 V. por elemento / To 1.05 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	15min	10min	5min	1min	30s	1s
MP12	1,4	2,2	3,5	5,1	6,5	8,7	13,0	15,6	16,8	19,5	26,8	30,5	39,1
MP18	2,3	3,6	5,8	8,4	10,6	14,2	21,2	25,6	27,5	31,9	43,9	49,9	64,0
MP25	3,1	5,0	8,0	11,6	14,7	19,8	29,5	35,5	38,3	45,0	60,9	69,3	88,9
MP30	4,0	6,3	10,3	14,8	18,8	25,3	37,8	45,4	49,0	56,6	78,0	88,7	114,0
MP37	4,8	7,5	12,2	17,6	22,4	30,0	44,8	54,0	58,1	67,3	92,6	105,0	135,0
MP50	6,7	10,5	17,1	24,6	31,2	41,9	62,5	75,3	81,1	93,8	129,0	147,0	188,0
MP55	7,4	11,7	19,0	27,4	34,7	46,6	69,6	83,8	90,3	104,0	144,0	164,0	210,0
MP64	8,2	12,9	21,0	30,4	39,0	52,7	76,7	92,4	99,5	114,0	151,0	168,0	215,0
MP80	10,5	16,5	26,8	38,8	49,8	67,4	97,9	118,0	127,0	146,0	193,0	214,0	262,0
MP95	12,7	20,0	32,6	47,3	60,6	82,0	119,0	143,0	155,0	177,0	235,0	260,0	319,0
MP115	14,9	23,4	38,1	55,2	70,8	95,8	139,0	168,0	181,0	207,0	275,0	304,0	373,0
MP140	18,3	28,7	46,9	67,8	87,0	118,0	168,0	202,0	219,0	255,0	337,0	374,0	458,0
MP160	21,0	33,1	54,0	78,1	100,0	136,0	194,0	232,0	253,0	293,0	389,0	430,0	528,0
MP180	23,8	37,5	61,1	88,4	113,0	153,0	219,0	263,0	286,0	332,0	440,0	487,0	597,0
MP200	26,6	41,8	68,2	98,7	127,0	171,0	245,0	293,0	319,0	370,0	491,0	544,0	667,0
MP220	29,2	46,0	75,0	109,0	139,0	188,0	269,0	322,0	351,0	407,0	540,0	598,0	733,0
MP240	32,0	50,3	82,1	119,0	152,0	206,0	295,0	353,0	384,0	446,0	591,0	655,0	803,0
MP260	34,8	54,7	89,2	129,0	166,0	224,0	320,0	384,0	417,0	485,0	642,0	711,0	872,0
MP280	36,0	57,0	94,0	135,0	170,0	232,0	336,0	404,0	441,0	513,0	683,0	758,0	932,0
MP300	37,5	59,1	96,3	139,0	179,0	242,0	346,0	414,0	451,0	523,0	693,0	768,0	942,0
MP320	40,2	63,2	103,0	149,0	191,0	259,0	370,0	443,0	482,0	560,0	742,0	822,0	1010,0
MP360	43,0	67,6	110,0	160,0	205,0	277,0	396,0	474,0	516,0	599,0	793,0	879,0	1080,0

Hasta 1.10 V. por elemento / To 1.10 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	15min	10min	5min	1min	30s	1s
MP12	1,4	2,2	3,4	4,9	6,1	8,0	11,0	12,8	14,0	16,4	23,1	26,1	32,6
MP18	2,2	3,5	5,6	7,9	9,9	13,1	18,0	20,9	22,9	27,0	37,8	42,7	53,4
MP25	3,1	4,9	7,8	11,0	13,8	18,3	25,0	29,0	32,3	38,0	52,4	59,3	74,2
MP30	4,0	6,3	10,0	14,1	17,6	23,4	32,0	37,1	40,6	48,5	67,1	75,9	94,9
MP37	4,7	7,4	11,8	16,8	20,9	27,7	38,0	44,1	48,3	58,5	79,7	90,1	113,0
MP50	6,6	10,4	16,5	23,4	29,2	38,7	53,0	61,5	67,3	79,2	111,0	126,0	157,0
MP55	7,4	11,5	18,4	26,0	32,5	43,1	59,0	68,4	75,5	88,2	124,0	140,0	175,0
MP64	8,1	12,7	20,3	29,0	36,7	47,5	65,0	75,4	84,2	97,2	129,0	143,0	178,0
MP80	10,3	16,2	25,9	37,1	46,8	60,6	83,0	96,3	108,0	124,0	165,0	182,0	220,0
MP95	12,5	19,7	31,6	45,1	57,0	73,7	101,0	117,0	131,0	151,0	201,0	222,0	268,0
MP115	14,6	23,0	36,9	52,7	66,6	86,1	118,0	137,0	153,0	177,0	234,0	259,0	313,0
MP140	18,0	28,2	45,3	64,7	81,8	105,0	139,0	168,0	188,0	217,0	288,0	318,0	385,0
MP160	20,7	32,5	52,2	74,6	94,2	121,0	160,0	194,0	216,0	250,0	332,0	367,0	443,0
MP180	23,5	36,8	59,1	84,4	107,0	137,0	182,0	219,0	245,0	283,0	375,0	415,0	501,0
MP200	26,2	41,1	65,9	94,2	119,0	153,0	203,0	245,0	273,0	316,0	419,0	463,0	560,0
MP220	28,8	45,2	72,5	104,0	131,0	168,0	223,0	269,0	301,0	347,0	461,0	510,0	615,0
MP240	31,5	49,4	79,4	113,0	143,0	184,0	244,0	295,0	329,0	380,0	504,0	558,0	674,0
MP260	34,2	53,7	86,3	123,0	156,0	200,0	265,0	320,0	358,0	413,0	548,0	606,0	732,0
MP280	36,0	56,0	90,0	130,0	165,0	210,0	283,0	340,0	380,0	439,0	582,0	651,0	780,0
MP300	37,0	58,0	93,1	133,0	168,0	215,0	286,0	346,0	386,0	446,0	592,0	655,0	790,0
MP320	39,6	62,1	99,7	142,0	180,0	231,0	306,0	370,0	413,0	477,0	634,0	701,0	846,0
MP360	42,3	66,4	107	152,0	192,0	247,0	328,0	396,0	442,0	510,0	677,0	749,0	904,0

Hasta 1.14 V. por elemento / To 1.14 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	15min	10min	5min	1min	30s	1s
MP12	1,3	2,1	3,3	4,5	5,4	6,5	8,6	10,7	11,9	14,1	20,0	22,4	28,5
MP18	2,2	3,4	5,4	7,4	8,9	10,7	14,1	17,5	19,4	23,1	32,7	36,6	46,7
MP25	3,0	4,7	7,5	10,3	12,3	14,9	19,6	24,3	27,0	32,0	45,5	50,9	64,8
MP30	3,9	6,0	9,5	13,1	15,7	19,0	25,1	31,0	34,6	41,0	58,2	65,1	83,0
MP37	4,6	7,2	11,3	15,6	18,7	22,6	29,8	36,9	41,0	48,7	69,1	77,3	98,5
MP50	6,4	10,0	15,8	21,8	26,1	31,5	41,6	51,4	57,2	67,9	96,4	108,0	137,0
MP55	7,1	11,1	17,6	24,2	29,0	35,0	46,3	57,2	63,7	75,6	107,0	120,0	153,0
MP64	7,8	12,2	19,5	27,3	33,4	40,6	53,5	64,6	72,0	83,1	111,0	122,0	160,0
MP80	9,9	15,6	24,9	34,8	42,7	51,8	68,3	82,5	91,9	106,0	142,0	156,0	179,0
MP95	12,1	18,9	30,3	42,4	51,9	63,0	83,1	100,0	112,0	129,0	172,0	189,0	218,0
MP115	14,1	22,1	35,4	49,5	60,7	73,6	97,1	117,0	131,0	151,0	201,0	221,0	255,0
MP140	17,4	27,2	43,5	60,8	74,6	90,5	119,0	144,0	161,0	185,0	247,0	272,0	313,0
MP160	20,0	31,3	50,1	70,1	85,9	104,0	137,0	166,0	185,0	214,0	285,0	313,0	360,0
MP180	22,6	35,4	56,7	79,3	97,2	118,0	155,0	188,0	209,0	242,0	322,0	354,0	408,0
MP200	25,3	39,6	63,3	88,5	109,0	132,0	174,0	210,0	234,0	270,0	360,0	395,0	455,0
MP220	27,8	43,5	69,6	97,4	119,0	145,0	191,0	231,0	257,0	297,0	395,0	435,0	501,0
MP240	30,4	47,6	76,2	107,0	131,0	159,0	209,0	252,0	281,0	325,0	433,0	476,0	548,0
MP260	33,1	51,8	82,8	116,0	142,0	172,0	227,0	274,0	306,0	353,0	470,0	517,0	596,0
MP280	35,0	54,0	88,0	122,0	150,0	182,0	240,0	290,0	325,0	376,0	499,0	549,0	633,0
MP300	35,7	55,9	89,4	125,0	153,0	186,0	245,0	296,0	330,0	381,0	508,0	559,0	643,0
MP320	38,2	59,8	95,7	134,0	164,0	199,0	262,0	317,0	353,0	408,0	544,0	598,0	689,0
MP360	40,8	63,9	102,0	143,0	175,0	213,0	280,0	339,0	378,0	436,0	581,0	639,0	736,0

SERIE HP / HP RANGE

Tablas de descarga en amperios (20°C) Amperes tabular discharge data (20°C)

Los datos de descarga indicados son para elementos plenamente cargados, después de permanecer en circuito abierto durante 1 hora, permitiéndose caídas de tensión en las conexiones.
Discharge data for full charged cells after 1 hour open circuit, allowing voltage losses on connections.

Hasta 0.65 V. por elemento / To 0.65 Volts per cell

Type	90s	60s	30s	10s	5s	1s
HP10	112	124	140	161	173	187
HP14	153	169	190	218	235	254
HP20	243	269	302	347	373	404
HP30	363	401	450	516	554	601
HP40	403	445	499	571	613	665
HP50	540	596	668	763	819	889
HP65	705	777	869	989	1060	1150
HP80	886	975	1090	1230	1320	1440
HP100	1050	1160	1290	1460	1560	1700
HP125	1310	1430	1590	1790	1920	2100
HP150	1490	1620	1800	2020	2160	2360
HP185	1880	2040	2250	2510	2670	2930
HP215	2070	2240	2470	2740	2910	3200
HP235	2340	2530	2780	3050	3240	3580
HP250	2440	2630	2880	3160	3350	3700
HP275	2520	2720	2970	3250	3450	3820

Hasta 0.85 V. por elemento / To 0.85 Volts per cell

Type	90s	60s	30s	10s	5s	1s
HP10	84,7	91,3	101	116	124	135
HP14	115	124	138	157	169	184
HP20	183	197	219	250	268	292
HP30	273	294	326	371	399	435
HP40	302	326	361	411	442	482
HP50	404	435	482	549	590	643
HP65	525	566	626	712	764	835
HP80	656	708	783	889	954	1040
HP100	777	838	928	1050	1120	1230
HP125	959	1030	1140	1290	1380	1520
HP150	1080	1160	1290	1460	1560	1710
HP185	1340	1450	1600	1810	1930	2130
HP215	1470	1590	1760	1970	2100	2320
HP235	1650	1780	1970	2210	2340	2600
HP250	1710	1850	2040	2280	2420	2690
HP275	1770	1910	2100	2350	2500	2770

Hasta 1.00 V. por elemento / To 1.00 Volts per cell

Type	5h	3h	90min	60min	30min	15min	10min	5min	3min	1min	30s	5s	1s
HP10	2,2	3,5	6,6	9,5	16,8	27,0	34,0	46,0	53,2	65,5	71,5	88,0	99,9
HP14	2,8	4,5	8,4	12,0	21,8	36,2	46,3	62,5	71,8	89,0	97,2	120,0	136,0
HP20	4,4	7,0	13,2	18,9	34,8	57,8	73,7	99,5	114,0	141,0	154,0	190,0	215,0
HP30	6,8	10,9	20,4	29,2	52,2	86,8	110,0	148,0	170,0	210,0	229,0	282,0	319,0
HP40	7,6	12,2	22,8	32,7	58,0	96,4	122,0	164,0	188,0	232,0	254,0	312,0	353,0
HP50	10,0	16,0	30,0	43,0	78,3	130,0	164,0	219,0	251,0	310,0	339,0	415,0	471,0
HP65	13,4	21,4	40,2	57,6	102,0	165,0	210,0	283,0	327,0	401,0	439,0	537,0	609,0
HP80	17,0	27,2	51,0	73,1	129,0	210,0	268,0	357,0	408,0	500,0	548,0	669,0	757,0
HP100	20,4	32,6	61,2	87,7	154,0	252,0	319,0	423,0	483,0	591,0	648,0	788,0	892,0
HP125	25,6	41,0	76,8	110,0	194,0	317,0	396,0	523,0	596,0	725,0	796,0	965,0	1090,0
HP150	29,4	47,0	88,2	126,0	222,0	356,0	445,0	588,0	673,0	817,0	897,0	1080,0	1220,0
HP185	38,0	60,8	114,0	163,0	285,0	453,0	566,0	737,0	838,0	1010,0	1110,0	1330,0	1500,0
HP215	42,2	67,5	127,0	181,0	318,0	497,0	623,0	807,0	916,0	1100,0	1210,0	1440,0	1630,0
HP235	48,8	78,1	146,0	210,0	366,0	573,0	705,0	906,0	1020,0	1220,0	1340,0	1600,0	1800,0
HP250	50,8	81,3	152,0	218,0	383,0	599,0	733,0	940,0	1060,0	1260,0	1390,0	1650,0	1860,0
HP275	53,0	84,8	159,0	228,0	399,0	624,0	759,0	969,0	1090,0	1300,0	1430,0	1700,0	1910,0

Hasta 1.05 V. por elemento / To 1.05 Volts per cell

Type	5h	3h	90min	60min	30min	15min	10min	5min	3min	1min	30s	5s	1s
HP10	2,2	3,5	6,4	9,1	15,8	24,9	30,5	39,5	45,1	55,8	61,6	74,8	85,7
HP14	2,8	4,4	8,2	11,6	20,2	31,8	39,9	53,5	61,3	75,8	83,7	102,0	116,0
HP20	4,4	6,9	12,9	18,3	31,7	49,9	62,4	83,7	97,5	120,0	133,0	161,0	185,0
HP30	6,7	10,7	19,9	28,2	49,0	77,2	96,0	126,0	145,0	179,0	198,0	240,0	274,0
HP40	7,5	12,0	22,2	31,5	54,7	86,3	107,0	140,0	161,0	198,0	219,0	265,0	303,0
HP50	9,9	15,8	29,3	41,5	72,0	114,0	140,0	187,0	215,0	264,0	292,0	354,0	404,0
HP65	13,3	21,1	39,2	55,6	94,5	148,0	183,0	243,0	279,0	343,0	379,0	459,0	523,0
HP80	16,8	26,8	49,7	70,6	120,0	187,0	232,0	306,0	349,0	427,0	472,0	572,0	651,0
HP100	20,2	32,1	59,7	84,7	144,0	226,0	278,0	363,0	414,0	505,0	558,0	675,0	768,0
HP125	25,3	40,3	74,9	106,0	180,0	284,0	348,0	453,0	510,0	620,0	686,0	828,0	940,0
HP150	29,1	46,3	86,0	122,0	204,0	318,0	390,0	507,0	577,0	699,0	773,0	933,0	1050,0
HP185	37,6	59,9	111,0	158,0	264,0	404,0	497,0	637,0	718,0	863,0	956,0	1150,0	1300,0
HP215	41,8	66,5	123,0	175,0	293,0	445,0	540,0	696,0	786,0	941,0	1040,0	1250,0	1410,0
HP235	48,3	76,9	143,0	203,0	339,0	520,0	628,0	788,0	881,0	1050,0	1160,0	1390,0	1560,0
HP250	50,3	80,0	149,0	211,0	353,0	541,0	655,0	817,0	913,0	1080,0	1200,0	1440,0	1610,0
HP275	52,5	83,5	155,0	220,0	368,0	562,0	677,0	845,0	941,0	1110,0	1230,0	1480,0	1660,0

Hasta 1.10 V. por elemento / To 1.10 Volts per cell

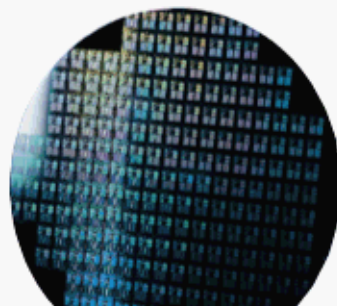
Type	5h	3h	90min	60min	30min	15min	10min	5min	3min	1min	30s	5s	1s
HP10	2,2	3,4	6,2	8,7	14,3	21,5	25,5	32,1	36,3	45,7	51,7	62,7	71,0
HP14	2,7	4,4	7,9	11,1	18,5	28,2	34,2	43,5	49,5	62,1	70,3	85,2	96,5
HP20	4,3	6,9	12,4	17,4	29,0	44,3	53,7	69,6	79,2	98,6	112,0	135,0	153,0
HP30	6,7	10,6	19,2	26,9	44,9	68,5	83,0	105,0	119,0	147,0	166,0	201,0	228,0
HP40	7,4	11,9	21,5	30,0	50,2	76,6	92,7	117,0	132,0	162,0	184,0	223,0	252,0
HP50	9,8	15,6	28,3	39,5	66,0	101,0	122,0	157,0	178,0	217,0	245,0	297,0	337,0
HP65	13,1	20,9	37,9	52,9	87,8	131,0	155,0	194,0	220,0	282,0	318,0	386,0	437,0
HP80	16,7	26,5	48,0	67,2	111,0	166,0	197,0	248,0	280,0	352,0	397,0	481,0	545,0
HP100	20,0	31,8	57,6	80,6	134,0	199,0	237,0	295,0	332,0	416,0	469,0	569,0	644,0
HP125	25,1	39,9	72,3	101,0	168,0	250,0	297,0	370,0	415,0	512,0	576,0	700,0	792,0
HP150	28,8	45,9	83,1	116,0	187,0	273,0	320,0	395,0	445,0	578,0	649,0	789,0	893,0
HP185	37,2	59,3	107,0	150,0	241,0	353,0	414,0	503,0	563,0	717,0	803,0	976,0	1100,0
HP215	41,4	65,8	119,0	167,0	268,0	392,0	460,0	560,0	627,0	783,0	876,0	1060,0	1200,0
HP235	47,8	76,1	138,0	193,0	310,0	454,0	532,0	645,0	722,0	875,0	977,0	1180,0	1340,0
HP250	49,8	79,2	144,0	201,0	323,0	472,0	554,0	675,0	756,0	906,0	1010,0	1230,0	1390,0
HP275	51,9	82,7	150,0	209,0	337,0	493,0	578,0	703,0	787,0	933,0	1040,0	1260,0	1430,0

Hasta 1.14 V. por elemento / To 1.14 Volts per cell

Type	5h	3h	90min	60min	30min	15min	10min	5min	3min	1min	30s	5s	1s
HP10	2,1	3,4	5,9	8,0	12,3	17,1	19,8	24,8	28,6	37,4	42,9	52,3	59,4
HP14	2,7	4,3	7,6	10,2	15,7	22,8	27,0	33,8	39,0	50,9	58,3	71,0	80,8
HP20	4,3	6,7	11,9	16,0	24,6	35,9	43,2	54,0	62,4	80,9	92,7	113,0	128,0
HP30	6,6	10,4	18,4	24,7	38,1	55,4	64,8	81,0	93,6	120,0	138,0	168,0	191,0
HP40	7,4	11,6	20,5	27,6	42,6	61,9	72,0	90,0	104,0	133,0	153,0	186,0	212,0
HP50	9,7	15,3	27,0	36,3	56,0	81,5	97,2	122,0	140,0	178,0	204,0	249,0	283,0
HP65	13,0	20,4	36,2	48,6	73,7	102,0	121,0	154,0	177,0	232,0	264,0	323,0	368,0
HP80	16,5	25,9	45,9	61,6	93,5	129,0	153,0	195,0	224,0	290,0	330,0	403,0	460,0
HP100	19,8	31,1	55,1	74,0	112,0	155,0	184,0	234,0	269,0	344,0	390,0	477,0	546,0
HP125	24,8	39,0	69,1	92,8	141,0	195,0	231,0	295,0	339,0	425,0	480,0	588,0	673,0
HP150	28,5	44,8	79,4	107,0	162,0	222,0	261,0	323,0	367,0	480,0	541,0	664,0	761,0
HP185	36,9	58,0	103,0	138,0	209,0	287,0	336,0	416,0	472,0	599,0	671,0	825,0	948,0
HP215	40,9	64,4	114,0	153,0	232,0	319,0	374,0	464,0	526,0	656,0	732,0	901,0	1040,0
HP235	47,3	74,4	132,0	177,0	268,0	368,0	431,0	534,0	606,0	736,0	817,0	1010,0	1160,0
HP250	49,3	77,5	137,0	184,0	279,0	384,0	451,0	559,0	635,0	763,0	846,0	1040,0	1200,0
HP275	51,4	80,8	143,0	192,0	292,0	400,0	469,0	582,0	660,0	787,0	871,0	1070,0	1240,0

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
All data contained in this brochure are subject to usual manufacturing tolerances.

Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
None of the figures herein contained can be considered as a contractual commitment.



Aplicaciones

Compañías de producción y distribución de electricidad, gas, agua. Plataformas petrolíferas, refinerías, industria química, hospitales, telecomunicaciones, ferrocarriles, aeropuertos, etc.

Applications

Utilities, oil and gas, industry, hospitals, telecom, railways, airports, etc.



DIMENSIONES Y CAPACIDADES

Elementos con placas de bolsas de gran capacidad

CAPACITIES AND DIMENSIONS

High capacity pocket plate cells

Tipo de elementos <i>Type of cells</i>	Capacidad nominal <i>Nominal capacity</i> (Ah)	Dimensiones de elemento (mm) <i>Cell dimensions</i>			Peso de elemento (lleno) <i>Cell weight (filled)</i> (Kg)	Reserva de electrolito <i>Electrolyte reserve</i> (cm ³)	Número y tamaño de terminales <i>Number and size of Terminals</i>
		L	W	H			
LB470P	470	171	195	405	21,0	1300	2xM10
LB510P	510	183	195	405	23,0	1400	2xM10
LB600P	600	219	195	405	28,0	1700	3xM10
LB645P	645	232	195	405	30,0	1800	3xM10
LB770P	770	268	195	405	34,5	2100	3xM10
LB860P	860	304	195	405	40,0	2400	4xM10
LB1020P	1020	352	195	405	46,0	2800	4xM10
LB1070P	1070	377	195	405	49,5	3000	5xM10
LB1280P	1280	437	195	405	57,5	3500	5xM10
LB1450P	1450	497	195	405	66,0	4000	6xM10
LB1540P	1540	522	195	405	69,0	4200	6xM10
MB370P	369	159	195	405	19,5	1200	2xM10
MB390P	392	171	195	405	21,0	1300	2xM10
MB415P	415	183	195	405	23,0	1400	2xM10
MB440P	438	183	195	405	23,5	1400	2xM10
MB460P	461	183	195	405	24,0	1400	2xM10
MB505P	505	213	195	405	27,5	1600	3xM10
MB555P	555	232	195	405	30,0	1800	3xM10
MB625P	625	268	195	405	34,5	2100	3xM10
MB690P	690	268	195	405	36,0	2100	3xM10
MB740P	740	304	195	405	40,0	2400	4xM10
MB830P	830	352	195	405	46,0	2800	4xM10
MB920P	920	352	195	405	48,0	2800	4xM10
MB965P	965	372	195	405	50,5	3000	6xM10
MB1040P	1040	437	195	405	57,5	3500	5xM10
MB1150P	1150	437	195	405	60,0	3500	5xM10
MB1220P	1220	510	195	405	67,5	4100	6xM10
MB1390P	1390	522	195	405	72,0	4200	6xM10
HB280P	281	183	195	405	23,5	1400	2xM10
HB305P	307	183	195	405	24,5	1400	2xM10
HB345P	345	232	195	405	29,5	1800	3xM10
HB385P	383	232	195	405	31,0	1700	3xM10
HB420P	422	268	195	405	34,5	2100	3xM10
HB460P	460	268	195	405	36,0	2100	3xM10
HB510P	510	304	195	405	42,0	2300	4xM10
HB560P	560	352	195	405	46,0	2800	4xM10
HB615P	615	352	195	405	48,0	2800	4xM10
HB640P	640	377	195	405	52,5	2900	5xM10
HB705P	705	437	195	405	57,5	3500	5xM10
HB765P	765	437	195	405	60,0	3500	5xM10
HB865P	865	497	195	405	68,5	4000	6xM10
HB920P	920	522	195	405	72,0	4200	6xM10

Todas las cifras y datos contenidos en este catálogo están sujetas a las tolerancias de fabricación normales. Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.

Las capacidades nominales están indicadas para un tiempo de descarga de 5 horas hasta una tensión final de 1.00 voltio por elemento, para elementos totalmente cargados a 20°C. Los elementos de Níquel Cadmio de placas embolsadas de EMISA están fabricados bajo la norma IEC-623.

All figures and data contained in this catalogue are subject to normal manufacturing tolerances. None of the figures shown in this brochure can be taken as a contractual commitment.

The nominal capacities are indicated at the 5 hour discharge rate up to an end voltage of 1.00 Volts per cell, for full charged cells at 20° C. EMISA's pocket plate Nickel-Cadmium cells are made under IEC-623 standard.

SERIE LB / LB RANGE

Tablas de descarga en amperios (20°C) Amperes tabular discharge data (20°C)

La corriente de descarga se refiere a elementos cargados en flotación en periodos largos.
Discharge current is for fully charged cells after prolonged float charge.

Hasta 1.00 V. por elemento / To 1.00 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
LB470P	47,8	59,3	94,0	152,0	207,0	248,0	307,0	378,0	428,0	457,0	500,0	575,0	731,0	792,0	890,0	921,0
LB510P	51,8	64,4	102,0	165,0	225,0	269,0	333,0	411,0	464,0	496,0	543,0	624,0	793,0	859,0	966,0	1000,0
LB600P	61,0	75,8	120,0	194,0	265,0	317,0	392,0	483,0	546,0	583,0	638,0	734,0	933,0	1010,0	1140,0	1180,0
LB645P	65,5	81,4	129,0	208,0	284,0	340,0	421,0	519,0	587,0	627,0	686,0	789,0	1000,0	1090,0	1220,0	1260,0
LB770P	78,2	97,2	154,0	249,0	339,0	406,0	502,0	620,0	701,0	749,0	819,0	942,0	1200,0	1300,0	1460,0	1510,0
LB860P	87,4	109,0	172,0	278,0	379,0	454,0	561,0	692,0	783,0	836,0	915,0	1050,0	1340,0	1450,0	1630,0	1690,0
LB1020P	104,0	129,0	204,0	329,0	450,0	538,0	666,0	821,0	928,0	992,0	1090,0	1250,0	1590,0	1720,0	1930,0	2000,0
LB1070P	109,0	135,0	214,0	346,0	472,0	564,0	698,0	861,0	974,0	1040,0	1140,0	1310,0	1660,0	1800,0	2030,0	2100,0
LB1280P	130,0	162,0	256,0	413,0	564,0	675,0	835,0	1030,0	1170,0	1250,0	1360,0	1570,0	1990,0	2160,0	2430,0	2510,0
LB1450P	147,0	183,0	290,0	468,0	639,0	765,0	946,0	1170,0	1320,0	1410,0	1540,0	1770,0	2260,0	2440,0	2750,0	2840,0
LB1540P	156,0	194,0	308,0	497,0	679,0	812,0	1000,0	1240,0	1400,0	1500,0	1640,0	1880,0	2400,0	2590,0	2920,0	3020,0

Hasta 1.05 V. por elemento / To 1.05 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
LB470P	47,3	58,8	93,1	136,0	182,0	220,0	259,0	315,0	351,0	375,0	418,0	476,0	598,0	646,0	723,0	769,0
LB510P	51,3	63,8	101,0	148,0	197,0	239,0	281,0	342,0	381,0	407,0	453,0	517,0	648,0	701,0	785,0	835,0
LB600P	60,4	75,0	119,0	174,0	232,0	281,0	331,0	403,0	449,0	478,0	533,0	608,0	763,0	825,0	923,0	982,0
LB645P	64,9	80,6	128,0	187,0	250,0	302,0	355,0	433,0	482,0	514,0	573,0	654,0	820,0	887,0	992,0	1060,0
LB770P	77,5	96,3	152,0	223,0	298,0	361,0	424,0	517,0	576,0	614,0	684,0	780,0	979,0	1060,0	1190,0	1260,0
LB860P	86,5	108,0	170,0	249,0	333,0	403,0	474,0	577,0	643,0	686,0	764,0	872,0	1090,0	1180,0	1320,0	1410,0
LB1020P	103,0	128,0	202,0	295,0	395,0	478,0	562,0	685,0	763,0	813,0	907,0	1030,0	1300,0	1400,0	1570,0	1670,0
LB1070P	108,0	134,0	212,0	310,0	414,0	502,0	590,0	718,0	800,0	853,0	951,0	1080,0	1360,0	1470,0	1650,0	1750,0
LB1280P	129,0	160,0	253,0	370,0	495,0	600,0	705,0	859,0	957,0	1020,0	1140,0	1300,0	1630,0	1760,0	1970,0	2100,0
LB1450P	146,0	181,0	287,0	420,0	561,0	680,0	799,0	973,0	1080,0	1160,0	1290,0	1470,0	1850,0	1990,0	2230,0	2370,0
LB1540P	155,0	193,0	305,0	446,0	596,0	722,0	849,0	1030,0	1150,0	1230,0	1370,0	1560,0	1960,0	2120,0	2370,0	2520,0

Hasta 1.10 V. por elemento / To 1.10 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
LB470P	45,0	55,9	82,1	120,0	159,0	184,0	211,0	254,0	284,0	301,0	327,0	382,0	487,0	523,0	565,0	572,0
LB510P	48,8	60,6	89,1	130,0	173,0	200,0	229,0	275,0	309,0	327,0	355,0	414,0	529,0	568,0	613,0	621,0
LB600P	57,4	71,3	105,0	153,0	203,0	235,0	269,0	324,0	363,0	385,0	418,0	487,0	622,0	668,0	722,0	730,0
LB645P	61,7	76,7	113,0	165,0	219,0	253,0	289,0	348,0	390,0	414,0	449,0	524,0	669,0	718,0	776,0	785,0
LB770P	73,7	91,5	135,0	197,0	261,0	302,0	345,0	416,0	466,0	494,0	536,0	625,0	799,0	857,0	926,0	937,0
LB860P	82,3	102,0	150,0	220,0	292,0	337,0	385,0	464,0	521,0	551,0	599,0	698,0	892,0	957,0	1030,0	1050,0
LB1020P	97,6	121,0	178,0	261,0	346,0	399,0	457,0	551,0	617,0	654,0	710,0	828,0	1060,0	1140,0	1230,0	1240,0
LB1070P	102,0	127,0	187,0	274,0	363,0	419,0	479,0	578,0	648,0	686,0	745,0	869,0	1110,0	1190,0	1290,0	1300,0
LB1280P	122,0	152,0	224,0	327,0	434,0	501,0	574,0	691,0	775,0	821,0	891,0	1040,0	1330,0	1420,0	1540,0	1560,0
LB1450P	139,0	172,0	253,0	371,0	492,0	568,0	650,0	783,0	878,0	930,0	1010,0	1180,0	1500,0	1610,0	1740,0	1770,0
LB1540P	147,0	183,0	269,0	394,0	522,0	603,0	690,0	832,0	932,0	987,0	1070,0	1250,0	1600,0	1710,0	1850,0	1880,0

Hasta 1.14 V. por elemento / To 1.14 Volts per cell

Type	10h	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
LB470P	42,4	52,7	71,2	106,0	132,0	149,0	170,0	201,0	227,0	239,0	261,0	300,0	388,0	422,0	452,0	459,0
LB510P	46,0	57,1	77,2	115,0	143,0	162,0	185,0	218,0	246,0	260,0	283,0	325,0	421,0	458,0	490,0	498,0
LB600P	54,1	67,2	90,8	136,0	169,0	191,0	217,0	257,0	290,0	305,0	333,0	382,0	496,0	539,0	577,0	586,0
LB645P	58,2	72,3	97,7	146,0	181,0	205,0	234,0	276,0	312,0	328,0	358,0	411,0	533,0	579,0	620,0	630,0
LB770P	69,4	86,3	117,0	174,0	217,0	245,0	279,0	330,0	372,0	392,0	427,0	491,0	636,0	691,0	740,0	752,0
LB860P	77,5	96,3	130,0	194,0	242,0	273,0	312,0	368,0	415,0	438,0	477,0	548,0	710,0	772,0	827,0	839,0
LB1020P	92,0	114,0	154,0	230,0	287,0	324,0	369,0	437,0	493,0	519,0	566,0	650,0	842,0	916,0	981,0	995,0
LB1070P	96,5	120,0	162,0	242,0	301,0	340,0	388,0	458,0	517,0	545,0	593,0	682,0	884,0	961,0	1030,0	1040,0
LB1280P	115,0	143,0	194,0	289,0	360,0	407,0	464,0	548,0	618,0	652,0	710,0	816,0	1060,0	1150,0	1230,0	1250,0
LB1450P	131,0	162,0	220,0	327,0	408,0	461,0	525,0	621,0	700,0	738,0	804,0	924,0	1200,0	1300,0	1390,0	1420,0
LB1540P	139,0	173,0	233,0	348,0	433,0	489,0	558,0	659,0	744,0	784,0	854,0	981,0	1270,0	1380,0	1480,0	1500,0

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
All data contained in this brochure are subject to usual manufacturing tolerances.

Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
None of the figures herein contained can be considered as a contractual commitment.

SERIE MB / MB RANGE

Tablas de descarga en amperios (20°C) Amperes tabular discharge data (20°C)

La corriente de descarga se refiere a elementos cargados en flotación en períodos largos.
Discharge current is for fully charged cells after prolonged float charge.

Hasta 1.00 V. por elemento / To 1.00 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
MB370P	46,6	73,8	121,0	176,0	213,0	276,0	390,0	457,0	499,0	563,0	682,0	949,0	1060,0	1270,0	1340,0
MB390P	49,5	78,4	128,0	187,0	226,0	293,0	415,0	485,0	530,0	598,0	724,0	1010,0	1130,0	1350,0	1430,0
MB415P	52,4	83,0	136,0	198,0	239,0	310,0	439,0	514,0	561,0	634,0	767,0	1070,0	1190,0	1430,0	1510,0
MB440P	55,3	87,6	143,0	209,0	253,0	328,0	463,0	542,0	592,0	669,0	809,0	1130,0	1260,0	1510,0	1590,0
MB460P	58,2	92,2	151,0	220,0	266,0	345,0	488,0	571,0	624,0	704,0	852,0	1190,0	1330,0	1590,0	1680,0
MB505P	63,8	101,0	165,0	241,0	291,0	378,0	534,0	625,0	683,0	771,0	933,0	1300,0	1450,0	1740,0	1840,0
MB555P	70,1	111,0	181,0	265,0	320,0	415,0	587,0	687,0	751,0	847,0	1030,0	1430,0	1600,0	1910,0	2020,0
MB625P	78,9	125,0	204,0	299,0	360,0	468,0	661,0	774,0	845,0	954,0	1160,0	1610,0	1800,0	2160,0	2270,0
MB690P	87,1	138,0	226,0	330,0	398,0	516,0	730,0	854,0	933,0	1050,0	1280,0	1780,0	1990,0	2380,0	2510,0
MB740P	93,4	148,0	242,0	354,0	427,0	554,0	783,0	916,0	1000,0	1130,0	1370,0	1900,0	2130,0	2550,0	2690,0
MB830P	105,0	166,0	271,0	397,0	479,0	621,0	878,0	1030,0	1120,0	1270,0	1530,0	2140,0	2390,0	2860,0	3020,0
MB920P	116,0	184,0	301,0	440,0	530,0	688,0	973,0	1140,0	1240,0	1410,0	1700,0	2370,0	2650,0	3170,0	3350,0
MB965P	122,0	193,0	316,0	461,0	556,0	722,0	1020,0	1200,0	1310,0	1470,0	1780,0	2480,0	2780,0	3330,0	3510,0
MB1040P	131,0	208,0	340,0	497,0	600,0	778,0	1100,0	1290,0	1410,0	1590,0	1920,0	2680,0	2990,0	3590,0	3780,0
MB1150P	145,0	230,0	376,0	550,0	663,0	860,0	1220,0	1420,0	1560,0	1760,0	2130,0	2960,0	3310,0	3970,0	4180,0
MB1220P	154,0	244,0	399,0	583,0	703,0	913,0	1290,0	1510,0	1650,0	1860,0	2260,0	3140,0	3510,0	4210,0	4440,0
MB1390P	176,0	278,0	455,0	664,0	801,0	1040,0	1470,0	1720,0	1880,0	2120,0	2570,0	3580,0	4000,0	4790,0	5060,0

Hasta 1.05 V. por elemento / To 1.05 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
MB370P	46,1	73,1	119,0	155,0	188,0	248,0	331,0	376,0	415,0	471,0	559,0	775,0	873,0	1030,0	1110,0
MB390P	49,0	77,6	127,0	165,0	200,0	263,0	352,0	399,0	441,0	501,0	594,0	824,0	927,0	1090,0	1180,0
MB415P	51,9	82,2	134,0	175,0	212,0	279,0	372,0	423,0	467,0	530,0	629,0	872,0	982,0	1150,0	1250,0
MB440P	54,8	86,7	141,0	184,0	223,0	294,0	393,0	446,0	492,0	559,0	664,0	920,0	1040,0	1220,0	1310,0
MB460P	57,6	91,3	149,0	194,0	235,0	310,0	414,0	469,0	518,0	589,0	698,0	968,0	1090,0	1280,0	1380,0
MB505P	63,1	100,0	163,0	213,0	257,0	339,0	453,0	514,0	568,0	645,0	765,0	1060,0	1200,0	1400,0	1520,0
MB555P	69,4	110,0	179,0	234,0	283,0	373,0	498,0	565,0	624,0	709,0	841,0	1170,0	1310,0	1540,0	1670,0
MB625P	78,1	124,0	202,0	263,0	319,0	420,0	561,0	636,0	703,0	798,0	947,0	1310,0	1480,0	1740,0	1880,0
MB690P	86,3	137,0	223,0	291,0	352,0	464,0	619,0	703,0	776,0	881,0	1050,0	1450,0	1630,0	1920,0	2070,0
MB740P	92,5	147,0	239,0	312,0	377,0	497,0	664,0	754,0	832,0	945,0	1120,0	1560,0	1750,0	2060,0	2220,0
MB830P	104,0	164,0	268,0	350,0	423,0	558,0	745,0	845,0	933,0	1060,0	1260,0	1740,0	1960,0	2310,0	2490,0
MB920P	115,0	182,0	297,0	387,0	469,0	618,0	825,0	937,0	1030,0	1180,0	1390,0	1930,0	2180,0	2560,0	2760,0
MB965P	121,0	191,0	312,0	406,0	492,0	649,0	866,0	983,0	1090,0	1230,0	1460,0	2030,0	2280,0	2680,0	2900,0
MB1040P	130,0	206,0	336,0	438,0	530,0	699,0	933,0	1060,0	1170,0	1330,0	1580,0	2190,0	2460,0	2890,0	3120,0
MB1150P	144,0	228,0	371,0	484,0	586,0	773,0	1030,0	1170,0	1290,0	1470,0	1740,0	2420,0	2720,0	3190,0	3450,0
MB1220P	153,0	242,0	394,0	514,0	622,0	820,0	1090,0	1240,0	1370,0	1560,0	1840,0	2560,0	2890,0	3390,0	3660,0
MB1390P	174,0	275,0	449,0	585,0	709,0	934,0	1250,0	1420,0	1560,0	1780,0	2110,0	2920,0	3290,0	3860,0	4170,0

Hasta 1.10 V. por elemento / To 1.10 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
MB370P	45,2	71,7	107,0	139,0	166,0	207,0	268,0	310,0	335,0	377,0	451,0	629,0	702,0	829,0	876,0
MB390P	48,0	76,1	114,0	147,0	177,0	220,0	284,0	329,0	356,0	401,0	479,0	668,0	746,0	881,0	931,0
MB415P	50,9	80,6	121,0	156,0	187,0	233,0	301,0	348,0	376,0	424,0	507,0	707,0	790,0	932,0	985,0
MB440P	53,7	85,0	127,0	164,0	198,0	246,0	318,0	368,0	397,0	448,0	535,0	746,0	833,0	984,0	1040,0
MB460P	56,5	89,5	134,0	173,0	208,0	259,0	334,0	387,0	418,0	471,0	563,0	786,0	877,0	1040,0	1100,0
MB505P	61,9	98,1	147,0	190,0	228,0	284,0	366,0	424,0	458,0	516,0	617,0	861,0	961,0	1140,0	1200,0
MB555P	68,0	108,0	162,0	208,0	250,0	312,0	402,0	466,0	503,0	567,0	678,0	946,0	1060,0	1250,0	1320,0
MB625P	76,6	121,0	182,0	235,0	282,0	351,0	453,0	525,0	567,0	639,0	763,0	1070,0	1190,0	1400,0	1480,0
MB690P	84,6	134,0	201,0	259,0	311,0	388,0	500,0	579,0	626,0	705,0	843,0	1180,0	1310,0	1550,0	1640,0
MB740P	90,7	144,0	215,0	278,0	334,0	416,0	537,0	621,0	671,0	757,0	904,0	1260,0	1410,0	1660,0	1760,0
MB830P	102,0	161,0	242,0	312,0	375,0	466,0	602,0	697,0	753,0	849,0	1010,0	1410,0	1580,0	1870,0	1970,0
MB920P	113,0	179,0	268,0	345,0	415,0	517,0	667,0	772,0	835,0	941,0	1120,0	1570,0	1750,0	2070,0	2190,0
MB965P	118,0	187,0	281,0	362,0	435,0	542,0	700,0	810,0	875,0	987,0	1180,0	1650,0	1840,0	2170,0	2290,0
MB1040P	127,0	202,0	303,0	391,0	469,0	585,0	754,0	873,0	943,0	1060,0	1270,0	1770,0	1980,0	2340,0	2470,0
MB1150P	141,0	223,0	335,0	432,0	519,0	646,0	834,0	965,0	1040,0	1180,0	1400,0	1960,0	2190,0	2580,0	2730,0
MB1220P	150,0	237,0	355,0	458,0	550,0	686,0	885,0	1020,0	1110,0	1250,0	1490,0	2080,0	2320,0	2740,0	2900,0
MB1390P	170,0	270,0	405,0	522,0	627,0	781,0	1010,0	1170,0	1260,0	1420,0	1700,0	2370,0	2650,0	3120,0	3300,0

Hasta 1.14 V. por elemento / To 1.14 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
MB370P	43,5	69,0	94,1	119,0	142,0	167,0	214,0	246,0	267,0	304,0	364,0	510,0	566,0	652,0	675,0
MB390P	46,2	73,3	100,0	127,0	151,0	178,0	227,0	261,0	284,0	323,0	386,0	542,0	601,0	693,0	718,0
MB415P	48,9	77,6	106,0	134,0	160,0	188,0	241,0	277,0	300,0	342,0	409,0	573,0	637,0	734,0	760,0
MB440P	51,7	81,9	112,0	142,0	169,0	199,0	254,0	292,0	317,0	361,0	432,0	605,0	672,0	774,0	802,0
MB460P	54,4	86,2	118,0	149,0	178,0	209,0	267,0	307,0	334,0	380,0	454,0	637,0	707,0	815,0	844,0
MB505P	59,6	94,4	129,0	163,0	195,0	229,0	293,0	337,0	365,0	416,0	498,0	698,0	775,0	893,0	924,0
MB555P	65,4	104,0	142,0	179,0	214,0	252,0	322,0	370,0	402,0	457,0	547,0	767,0	852,0	981,0	1020,0
MB625P	73,7	117,0	159,0	202,0	241,0	284,0	362,0	417,0	452,0	515,0	616,0	863,0	959,0	1110,0	1140,0
MB690P	81,4	129,0	176,0	223,0	266,0	313,0	400,0	460,0	499,0	569,0	680,0	953,0	1060,0	1220,0	1260,0
MB740P	87,3	138,0	189,0	239,0	285,0	336,0	429,0	493,0	535V	610,0	729,0	1020,0	1140,0	1310,0	1360,0
MB830P	97,9	155,0	212,0	268,0	320,0	377,0	481,0	553,0	60,0	684,0	818,0	1150,0	1270,0	1470,0	1520,0
MB920P	108,0	172,0	235,0	298,0	355,0	417,0	533,0	613,0	666,0	758,0	906,0	1270,0	1410,0	1630,0	1680,0
MB965P	114,0	180,0	246,0	312,0	372,0	438,0	559,0	643,0	698,0	795,0	951,0	1330,0	1480,0	1710,0	1770,0
MB1040P	123,0	194,0	265,0	336,0	401,0	472,0	603,0	693,0	753,0	857,0	1030,0	1440,0	1600,0	1840,0	1900,0
MB1150P	136,0	215,0	293,0	372,0	443,0	522,0	667,0	766,0	832,0	948,0	1130,0	1590,0	1760,0	2030,0	2110,0
MB1220P	144,0	228,0	311,0	395,0	470,0	553,0	707,0	813,0	883,0	1010,0	1200,0	1690,0	1870,0	2160,0	2230,0
MB1390P	164,0	260,0	354,0	450,0	536,0	631,0	806,0	926,0	1010,0	1150,0	1370,0	1920,0	2130,0	2460,0	2550,0

SERIE HB / HB RANGE

Tablas de descarga en amperios (20°C) Amperes tabular discharge data (20°C)

La corriente de descarga se refiere a elementos cargados en flotación en períodos largos.
Discharge current is for fully charged cells after prolonged float charge.

Hasta 0.65 V. por elemento / To 0.65 Volts per cell

Type	90s	60s	30s	15s	5s	1s
HB280P	2600	2880	3240	3700	4060	4400
HB305P	2840	3140	3530	4030	4420	4790
HB345P	3210	3550	3990	4560	5000	5420
HB385P	3580	3970	4450	5090	5580	6040
HB420P	3910	4330	4860	5550	6090	6590
HB460P	4280	4740	5320	6080	6670	7220
HB510P	4740	5250	5900	6740	7390	8010
HB560P	5210	5770	6470	7400	8120	8790
HB615P	5720	6330	7110	8120	8910	9660
HB640P	5950	6590	7400	8450	9280	10050
HB705P	6560	7260	8150	9310	10220	11070
HB765P	7120	7880	8840	10110	11090	12010
HB865P	8050	8910	10000	11430	12540	13580
HB920P	8560	9480	10640	12150	13330	14440

Hasta 0.85 V. por elemento / To 0.85 Volts per cell

Type	90s	60s	30s	15s	5s	1s
HB280P	1990	2170	2430	2760	3000	3260
HB305P	2160	2370	2650	3000	3260	3550
HB345P	2450	2680	2990	3400	3690	4010
HB385P	2730	2990	3340	3790	4120	4480
HB420P	2980	3260	3640	4130	4490	4880
HB460P	3260	3570	3990	4530	4920	5350
HB510P	3620	3960	4420	5020	5460	5930
HB560P	3970	4350	4860	5510	5990	6510
HB615P	4360	4780	5330	6050	6580	7150
HB640P	4540	4970	5550	6300	6850	7440
HB705P	5000	5470	6110	6940	7540	8200
HB765P	5430	5940	6640	7530	8180	8900
HB865P	6140	6720	7500	8510	9250	10060
HB920P	6530	7140	7980	9060	9840	10700

Hasta 1.00 V. por elemento / To 1.00 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
HB280P	35.4	56.0	92.1	137.0	180.0	263.0	479.0	641.0	720.0	811.0	959.0	1320.0	1500.0	1820.0	1930.0
HB305P	38.5	61.0	100.0	149.0	196.0	287.0	521.0	698.0	785.0	884.0	1040.0	1440.0	1630.0	1990.0	2100.0
HB345P	43.6	69.0	113.0	168.0	221.0	324.0	590.0	789.0	888.0	1000.0	1180.0	1630.0	1850.0	2250.0	2380.0
HB385P	48.6	77.0	127.0	188.0	247.0	362.0	658.0	881.0	991.0	1120.0	1320.0	1820.0	2060.0	2510.0	2650.0
HB420P	53.0	84.0	138.0	205.0	270.0	395.0	718.0	961.0	1080.0	1220.0	1440.0	1980.0	2250.0	2740.0	2890.0
HB460P	58.1	92.0	151.0	224.0	295.0	432.0	786.0	1050.0	1180.0	1340.0	1580.0	2170.0	2460.0	3000.0	3170.0
HB510P	64.4	102.0	168.0	249.0	327.0	479.0	872.0	1160.0	1310.0	1480.0	1750.0	2410.0	2730.0	3320.0	3510.0
HB560P	70.7	112.0	184.0	27.0	360.0	526.0	957.0	1280.0	1440.0	1620.0	1920.0	2640.0	3000.0	3650.0	3860.0
HB615P	77.7	123.0	202.0	300.0	395.0	578.0	1050.0	1410.0	1580.0	1780.0	2110.0	2900.0	3290.0	4010.0	4230.0
HB640P	80.8	128.0	211.0	312.0	411.0	602.0	1090.0	1470.0	1650.0	1850.0	2190.0	3020.0	3420.0	4170.0	4410.0
HB705P	89.0	141.0	232.0	344.0	453.0	663.0	1210.0	1610.0	1810.0	2040.0	2410.0	3330.0	3770.0	4590.0	4850.0
HB765P	96.6	153.0	252.0	373.0	491.0	719.0	1310.0	1750.0	1970.0	2220.0	2620.0	3610.0	4090.0	4980.0	5270.0
HB865P	109.0	173.0	285.0	422.0	555.0	813.0	1480.0	1980.0	2230.0	2510.0	2960.0	4080.0	4630.0	5630.0	5960.0
HB920P	116.0	184.0	303.0	449.0	591.0	865.0	1570.0	2110.0	2370.0	2670.0	3150.0	4340.0	4920.0	5990.0	6330.0

Hasta 1.05 V. por elemento / To 1.05 Volts per cell

Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
HB280P	35.0	55.4	90.7	134.0	176.0	255.0	454.0	548.0	598.0	670.0	780.0	1110.0	1250.0	1510.0	1580.0
HB305P	38.1	60.4	98.8	146.0	192.0	278.0	494.0	597.0	651.0	729.0	849.0	1210.0	1370.0	1650.0	1720.0
HB345P	43.1	68.3	112.0	165.0	217.0	314.0	559.0	676.0	736.0	825.0	961.0	1370.0	1540.0	1860.0	1940.0
HB385P	48.1	76.2	125.0	184.0	242.0	350.0	624.0	754.0	822.0	921.0	1070.0	1530.0	1720.0	2080.0	2170.0
HB420P	52.5	83.2	136.0	201.0	264.0	382.0	680.0	823.0	897.0	1000.0	1170.0	1670.0	1880.0	2270.0	2360.0
HB460P	57.5	91.1	149.0	220.0	289.0	419.0	745.0	901.0	982.0	1100.0	1280.0	1830.0	2060.0	2480.0	2590.0
HB510P	63.8	101.0	165.0	244.0	320.0	464.0	826.0	999.0	1090.0	1220.0	1420.0	2030.0	2280.0	2750.0	2870.0
HB560P	70.0	111.0	181.0	268.0	352.0	510.0	907.0	1100.0	1200.0	1340.0	1560.0	2220.0	2510.0	3020.0	3150.0
HB615P	76.9	122.0	199.0	295.0	386.0	560.0	996.0	1210.0	1310.0	1470.0	1710.0	2440.0	2750.0	3320.0	3460.0
HB640P	80.0	127.0	207.0	307.0	402.0	582.0	1040.0	1250.0	1370.0	1530.0	1780.0	2540.0	2860.0	3460.0	3600.0
HB705P	88.1	140.0	228.0	338.0	443.0	642.0	1140.0	1380.0	1510.0	1690.0	1960.0	2800.0	3160.0	3810.0	3970.0
HB765P	95.6	151.0	248.0	366.0	480.0	696.0	1240.0	1500.0	1630.0	1830.0	2130.0	3040.0	3420.0	4130.0	4300.0
HB865P	108.0	171.0	280.0	414.0	543.0	787.0	1400.0	1690.0	1850.0	2070.0	2410.0	3440.0	3870.0	4670.0	4870.0
HB920P	115.0	182.0	298.0	441.0	578.0	837.0	1490.0	1800.0	1960.0	2200.0	2560.0	3650.0	4120.0	4970.0	5180.0

Hasta 1.10 V. por elemento / To 1.10 Volts per cell

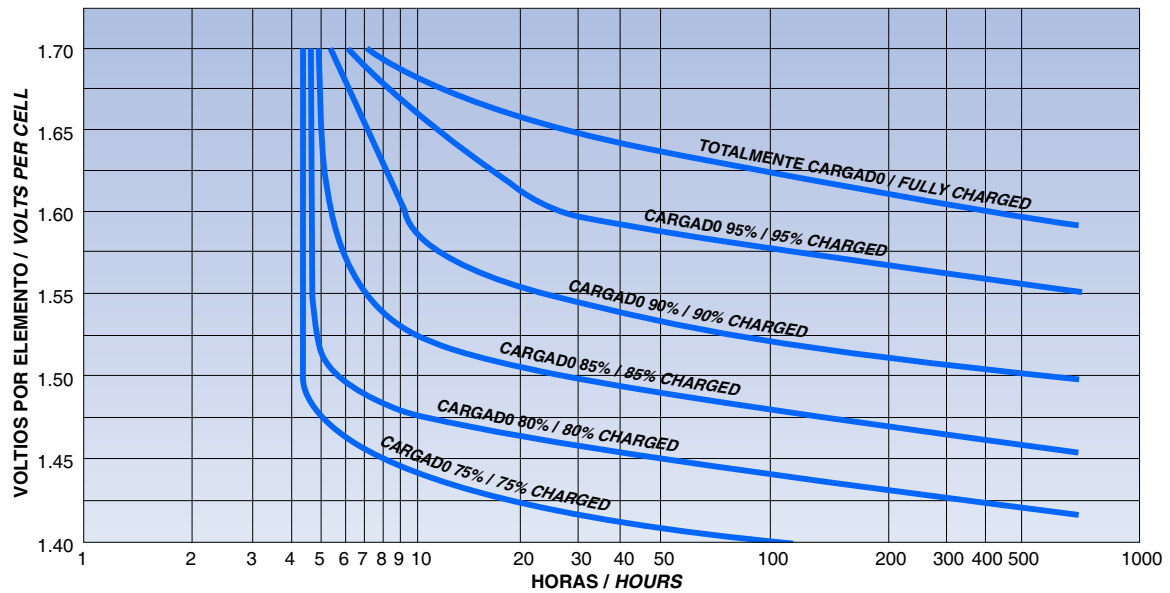
Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
HB280P	34.3	54.4	88.2	130.0	169.0	241.0	366.0	419.0	464.0	513.0	599.0	887.0	1010.0	1200.0	1260.0
HB305P	37.4	59.2	96.1	141.0	185.0	263.0	399.0	457.0	505.0	559.0	652.0	966.0	1100.0	1310.0	1370.0
HB345P	42.3	67.0	109.0	160.0	209.0	297.0	451.0	517.0	572.0	632.0	738.0	1090.0	1240.0	1480.0	1550.0
HB385P	47.2	74.8	121.0	178.0	233.0	332.0	503.0	577.0	638.0	706.0	823.0	1220.0	1390.0	1650.0	1730.0
HB420P	51.5	81.6	132.0	194.0	254.0	362.0	549.0	629.0	696.0	770.0	898.0	1330.0	1510.0	1800.0	1890.0
HB460P	56.4	89.3	145.0	213.0	278.0	396.0	601.0	689.0	762.0	843.0	984.0	1460.0	1660.0	1980.0	2070.0
HB510P	62.5	99.0	161.0	236.0	309.0	439.0	666.0	764.0	845.0	935.0	1090.0	1620.0	1840.0	2190.0	2290.0
HB560P	68.6	109.0	176.0	259.0	339.0	482.0	732.0	839.0	928.0	1030.0	1200.0	1770.0	2020.0	2410.0	2520.0
HB615P	75.4	119.0	194.0	285.0	372.0	530.0	804.0	921.0	1020.0	1130.0	1320.0	1950.0	2220.0	2640.0	2770.0
HB640P	78.4	124.0	202.0	296.0	387.0	551.0	836.0	958.0	1060.0	1170.0	1370.0	2030.0	2310.0	2750.0	2880.0
HB705P	86.4	137.0	222.0	326.0	427.0	607.0	921.0	1060.0	1170.0	1290.0	1510.0	2230.0	2540.0	3030.0	3170.0
HB765P	93.8	149.0	241.0	354.0	463.0	659.0	1000.0	1150.0	1270.0	1400.0	1640.0	2420.0	2760.0	3290.0	3440.0
HB865P	106.0	168.0	272.0	400.0	523.0	745.0	1130.0	1300.0	1430.0	1590.0	1850.0	2740.0	3120.0	3710.0	3890.0
HB920P	113.0	179.0	290.0	426.0	557.0	792.0	1200.0	1380.0	1520.0	1690.0	1970.0	2910.0	3310.0	3950.0	4140.0

Hasta 1.14 V. por elemento / To 1.14 Volts per cell

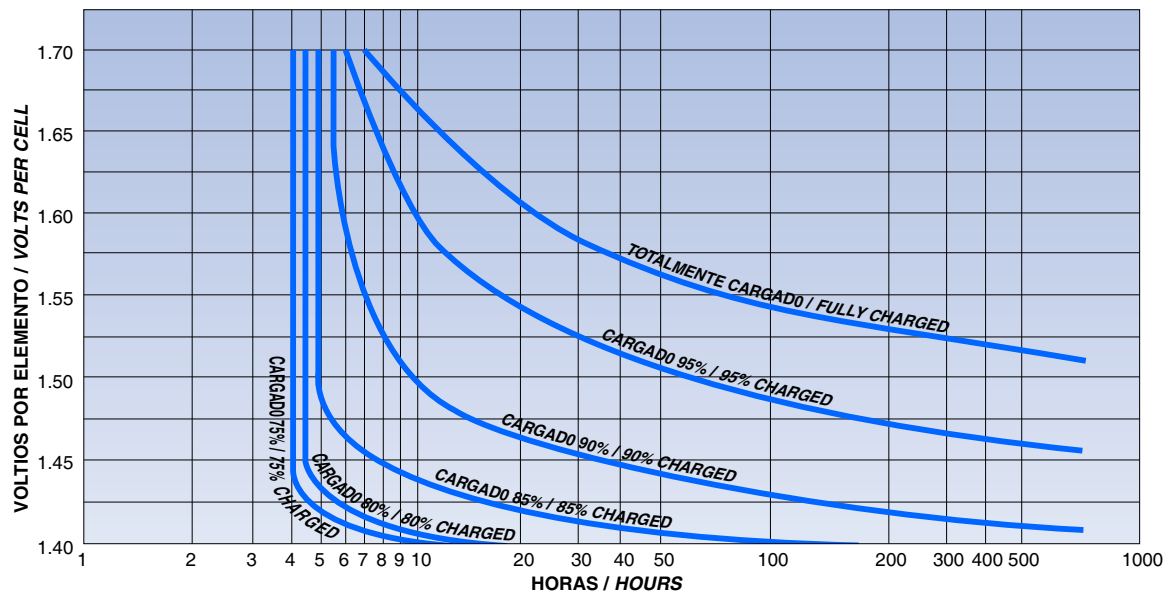
Type	8h	5h	3h	2h	90min	60min	30min	20min	15min	10min	5min	1min	30s	5s	1s
HB280P	33.0	52.3	84.6	124.0	160.0	211.0	281.0	324.0	356.0	390.0	473.0	705.0	808.0	951.0	984.0
HB305P	36.0	57.0	92.1	135.0	174.0	229.0	306.0	353.0	388.0	425.0	515.0	768.0	880.0	1040.0	1070.0
HB345P	40.7	64.5	104.0	153.0	197.0	259.0	346.0	400.0	439.0	481.0	583.0	869.0	996.0	1170.0	1210.0
HB385P	45.4	72.0	116.0	170.0	220.0	290.0	386.0	446.0	490.0	537.0	651.0	969.0	1110.0	1310.0	1350.0
HB420P	49.5	78.5	127.0	186.0	240.0	316.0	421.0	487.0	534.0	586.0	710.0	1060.0	1210.0	1430.0	1480.0
HB460P	54.2	86.0	139.0	203.0	263.0	346.0	462.0	533.0	585.0	641.0	777.0	1160.0	1330.0	1560.0	1620.0
HB510P	60.1	95.3	154.0	225.0	292.0	384.0	512.0	591.0	649.0	711.0	862.0	1280.0	1470.0	1730.0	1790.0
HB560P	66.0	105.0	169.0	248.0	320.0	421.0	562.0	649.0	712.0	781.0	946.0	1410.0	1620.0	1900.0	1970.0
HB615P	72.5	115.0	186.0	272.0	352.0	462.0	617.0	713.0	782.0	857.0	1040.0	1550.0	1780.0	2090.0	2160.0
HB640P	75.5	120.0	193.0	283.0	366.0	481.0	642.0	742.0	814.0	892.0	1080.0	1610.0	1850.0	2170.0	2250.0
HB705P	83.1	132.0	213.0	312.0	403.0	530.0	707.0	817.0	897.0	983.0	1190.0	1780.0	2040.0	2390.0	2480.0
HB765P	90.2	143.0	231.0	338.0	438.0	575.0	768.0	886.0	973.0	1070.0	1290.0	1930.0	2210.0	2600.0	2690.0
HB865P	102.0	162.0	261.0	382.0	495.0	650.0	868.0	1000.0	1100.0	1210.0	1460.0	2180.0	2500.0	2940.0	3040.0
HB920P	108.0	172.0	278.0	407.0	526.0	692.0	923.0	1070.0	1170.0	1280.0	1560.0	2320.0	2660.0	3130.0	3230.0

CURVAS DE DESCARGA DISCHARGING CURVES

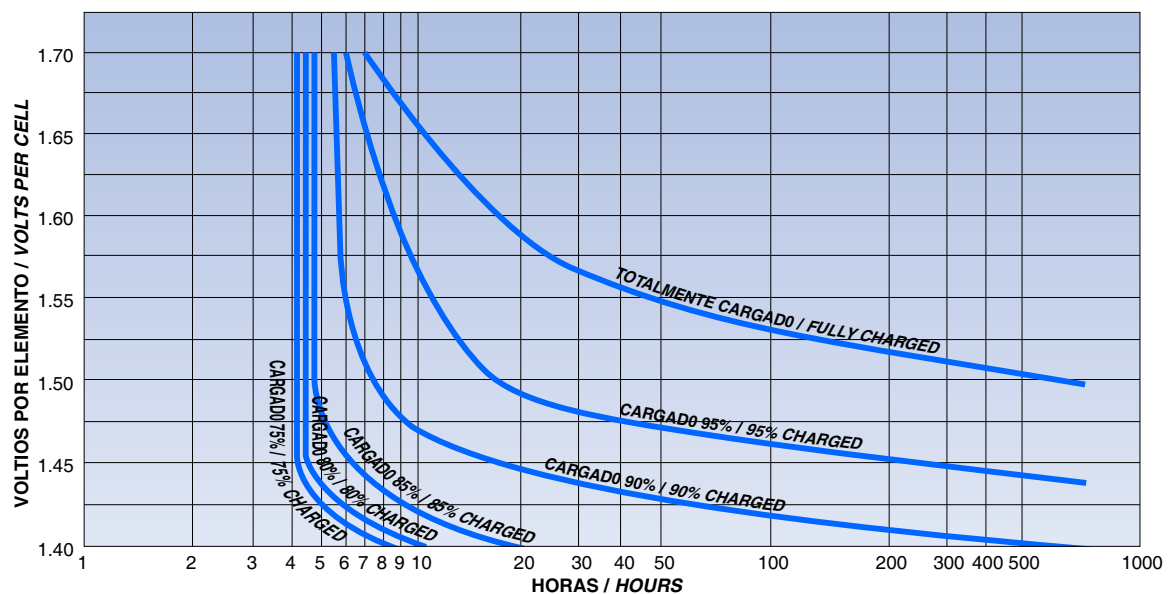
Elementos L / L cells



Elementos M / M cells



Elementos H / H cells



DATOS BÁSICOS REQUERIDOS PARA EL CÁLCULO DEL DIMENSIONAMIENTO DE UNA BATERÍA

BASIC DATA REQUIRED FOR A PRECISE BATTERY SIZING CALCULATION

- TENSIÓN MÁXIMA EN CARGA
- TENSIÓN MÍNIMA EN DESCARGA
- CORRIENTE DE SERVICIO (A)
- TIEMPO DE AUTONOMÍA
- SISTEMA DE CARGA
- TENSIÓN NOMINAL DEL SISTEMA
- RANGO DE TEMPERATURA
- DISPOSICIÓN DE LA BATERÍA Y ESPACIO DISPONIBLE
- CONDICIONES FÍSICAS
- MAXIMUM CHARGING VOLTAGE
- MINIMUM DISCHARGING VOLTAGE
- LOAD CURRENT (AMPERES)
- BACKUP TIME
- METHOD OF CHARGING
- NOMINAL VOLTAGE OF THE SYSTEM
- TEMPERATURE RANGE
- BATTERY LAYOUT AND AVAILABLE SPACE
- PHYSICAL CONDITIONS

DETERMINACIÓN DEL NÚMERO DE ELEMENTOS EN UNA BATERÍA

CALCULATION OF THE NUMBER OF CELLS IN A BATTERY

El número de elementos en una batería puede ser determinado simplemente dividiendo la tensión nominal del sistema entre la tensión nominal del elemento (1,2V), con los siguientes resultados:

The number of cells in a battery may be determined by simply dividing the nominal voltage of the system by the nominal voltage of a cell (1.2 V):

TENSIÓN DEL SISTEMA SYSTEM VOLTAGE	NÚMERO DE ELEMENTOS NUMBER OF CELLS	VARIACIÓN EN LA PRÁCTICA SPREAD IN THE PRACTICE
24	20	18 - 21
36	30	27 - 31
48	40	36 - 41
110	92	88 - 93
220	184	180 - 186

En la práctica, el número de elementos se debe seleccionar de acuerdo con los límites de la tensión del sistema, debiendo reunir dos condiciones:

- La tensión en corriente continua con la que funciona normalmente el sistema cuando existe tensión de entrada en corriente alterna (tensión de flotación), debe ser adecuada para cargar correctamente la batería.
- La batería debe ser capaz de proporcionar la carga requerida por la aplicación y su tensión no deberá caer por debajo de la tensión mínima especificada.

In the practice, the number of cells must be selected to suit the voltage limits of the system, while meeting two conditions:

- *The voltage at which the system normally operates when the mains are healthy (the floating charge voltage) must be adequate to properly charge the battery.*
- *The battery must be capable of supplying the required load for the application and its voltage must not fall lower than the specified minimum end of discharge voltage.*

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