

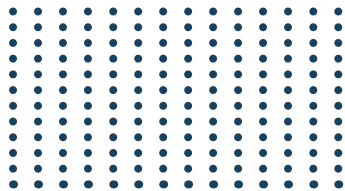
EL.MO.srl

PILE E ACCUMULATORI *BATTERIES AND ACCUMULATORS*

Li-ion/Polim | Ni-Mh | Ni-Cd

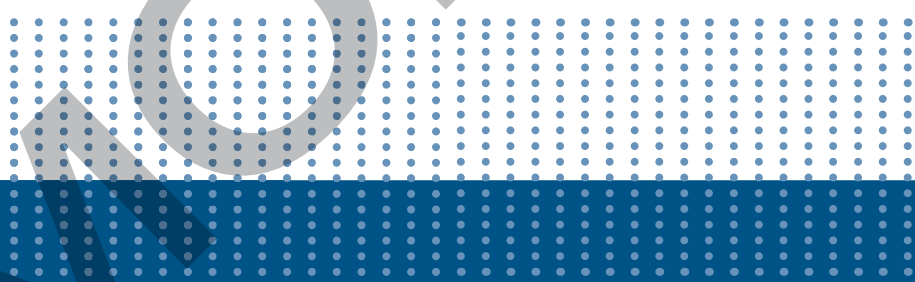
A nighttime photograph of a city skyline, likely Toronto, with the CN Tower and various skyscrapers illuminated. The lights are reflected in the water in the foreground. A large, semi-transparent watermark 'EL.MO.srl' is overlaid diagonally across the image.

Battery
Expert
Solutions

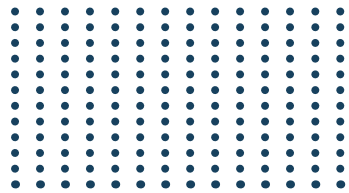


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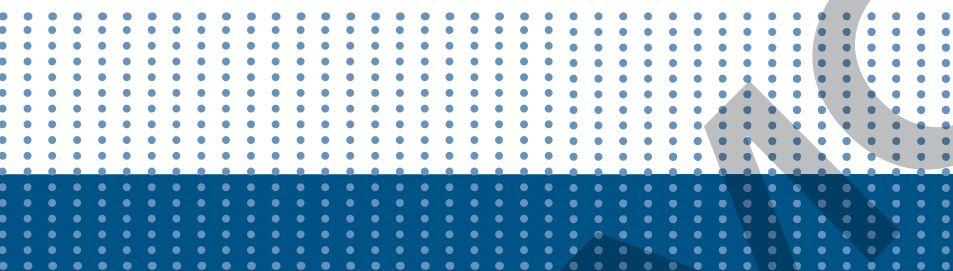
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MASSIMA EFFICIENZA ECCELLENZA INNOVAZIONE

MAXIMUM EFFICIENCY - EXCELLENCE - INNOVATION

NO-SRI



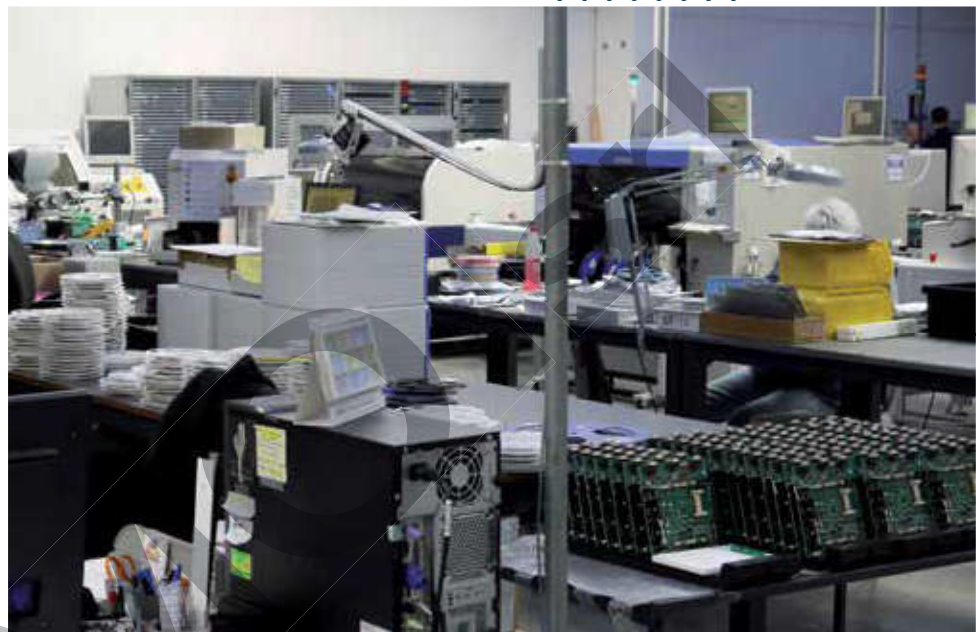


L'AZIENDA

COMPANY PROFILE



EL.MO.srl, fondata nel 1981 a Mortara, si pone tra le più importanti aziende italiane di “ENERGIA PORTATILE” fornendo pile e accumulatori per soddisfare il settore industriale sempre più esigente e specializzato nei diversi settori di impiego. EL.MO.srl ha stretto partnership tecnico commerciali con primari costruttori di Pile e accumulatori scelti, e da noi qualificati, per la loro qualità ed affidabilità. EL.MO.srl è agente esclusivo di Varta Batterie, sul territorio Nazionale, nel settore industriale primo equipaggiamento. È anche distributore diretto Varta per quei clienti che necessitano di quantità non gestibili in agenzia. EL.MO.srl ha ottenuto il prestigioso riconoscimento della conformità del sistema qualità in accordo alla normativa ISO 9001:2008 rilasciata dal TÜV Italia. Le risorse ed il know-how acquisite nel tempo, permettono ad EL.MO.srl di garantire ai propri Clienti un'affidabilità nella qualità e servizio. La sede di EL.MO.srl occupa una superficie di 2800 mq dove sono riuniti uffici commerciali, amministrativi, tecnici, il magazzino semilavorati, prodotti finiti e le linee di assemblaggio suddivise per prodotto. Il focus dell'azienda è il raggiungimento della massima soddisfazione del cliente fornendo le linee guida nel supporto tecnico, produttivo e logistico. Nella nostra sede di Mortara collaborano circa 60 persone suddivise nei vari settori aziendali. Qualità, flessibilità e reattività commerciale sono certamente le caratteristiche che ci contraddistinguono e costituiscono la nostra filosofia nel Made in Italy. I nostri prodotti, in continua evoluzione, rappresentano quanto di meglio nel settore dell'Energia Autonoma.



Established in 1981 in Mortara, EL.MO.srl now ranks among the most valuable Italian companies in the field of "PORTABLE ENERGY"; the company supplies batteries and accumulators to the industrial sector which is increasingly demanding and focused on the different application fields. The Company has signed successful partnerships with primary manufacturers of high-quality batteries and accumulators selected and qualified for their top quality and reliability. EL.MO.srl is Sole Agent in Italy for Varta Batteries in the OEM sector; the company is also Varta Direct Distributor for those customers who need min-average product quantities. EL.MO.srl has obtained one of the major conformity certifications of the quality assurance certification systems in compliance with the ISO 9001:2008 standard management system, released by TÜV ITALIA. The company's assets and specific know-how acquired over the years, grant our customers an excellent reliability as regards quality, evaluation, planning and after-sale services. EL.MO.srl headquarters, covering a surface of 2,800 square meters, include commercial facilities, technical and accountancy offices, a warehouse for semi-finished and finished products and different assembly lines dedicated to specific products. The Company's main focus is dedicated to delivering maximum satisfaction to our customers by supplying key technical assistance as well as production and logistic support. Approx. 60 staff members work in the headquarters located in Mortara. Quality, flexibility and quick commercial feedback represent our main assets and resources and are definitely at the basis of our idea of Made in Italy. Our constantly developing products involve state-of-the-art results in the field of Portable Energy.

I PRODOTTI

PRODUCTS



- Accumulatori al Nichel Cadmio
- Accumulatori al Nichel Idruri Metallici
- Accumulatori al Litio Ione
- Accumulatori al Litio Polimeri
- Accumulatori al Piombo calcio
- Pile Alcaline VARTA
- Pile Zinco Cloride VARTA
- Pile al litio Cloruro di Tionile Energy/High Power/High Temperature
- Pile al litio Biossido di Manganese High Power/High Capacity
- Pile al litio Biossido di Manganese Button Type
- Caricatori per Ni-Cd Ni-Mh
- Caricatori per Litio

- *Nickel-Cadmium Accumulators*
- *Hydride-Nickel Accumulators*
- *Lithium-Ione Accumulators*
- *Lithium-Polymer Accumulators*
- *Lead-Calcium Accumulators*
- *VARTA Alkaline Batteries*
- *VARTA Zinc-Chloride Batteries*
- *Thionyl-Chloride Batteries Energy High Power/High Temperature*
- *Lithium Manganese Dioxide Batteries High Power/High Capacity*
- *Lithium Manganese Dioxide Button-Type Batteries*
- *Ni-Cd Ni-Mh Chargers*
- *Lithium Chargers*

QUALITÀ CERTIFICATA

CERTIFIED QUALITY ASSURANCE



CERTIFICAZIONE

L'Azienda ha ottenuto nel 2005 la Certificazione di assicurazione di qualità in conformità con la normativa UNI-EN-ISO 9001-2008 rilasciata da TÜV Italia

CERTIFICATION

In 2005, TÜV ITALIA has awarded EL.MO.srl with the Quality Assurance Management System Certification in compliance with UNI-EN ISO 9001:2008 standard management system

AGENTE ESCLUSIVO VARTA

VARTA SOLE AGENT



VARTA INDUSTRIAL – High Quality Alkaline

Per scarica continua o a impulsi ad elevata corrente di scarica.

Le batterie alcaline sono sigillate ermeticamente per prevenire eventuali perdite.

Gamma di Tensioni

- ▼ Tensione open circuit: da 1,55 V a 1,70 V / batteria
- ▼ Gamma tensione di funzionamento: da open circuit a 0,8V; a seconda delle caratteristiche dell'applicazione
- ▼ Minimo consigliato di tensione finale di scarica: 0,9 V / batteria

Capacità disponibili

I fattori che influenzano la capacità sono

- ▼ Regime di scarica
- ▼ Temperatura ambiente
- ▼ Tensione di scarica finale
- ▼ Tempo di immagazzinamento

I valori relativi alla capacità sono dettagliati sulle schede tecniche per i diversi tipi di applicazione

Qualità

Il sistema di controllo della qualità di VARTA Consumer Batteries & Co. KGaA è certificato conformemente alla normativa DIN EN ISO 9001:2008. (1)

(1) EN: Normativa Europea - ISO: Organizzazione Internazionale per la Standardizzazione

For standby or pulse discharge with high discharge currents.

Alkaline cells are hermetically sealed against leakage.

Voltage Range

- ▼ Open circuit voltage: 1.55 V to 1.70 V / cell
- ▼ Operating voltage range: From the open circuit to 0.8 V, dependent on the application features
- ▼ Recommended minimum of the final discharging voltage: 0.9 V / cell

Available Capacity

Factors having an impact on the capacity are:

- ▼ Rate of discharge
- ▼ Ambient temperature
- ▼ Final discharging voltage
- ▼ Storage time

The capacity values for different application types are specified for different application types on the technical data sheet.

Quality

The quality management system of VARTA Consumer Batteries & Co. KGaA is certified according to DIN EN ISO 9001:2008. (1)

(1) EN = European Norm, ISO = International Organization of Standardization



Dati Tecnici / Technical Features:

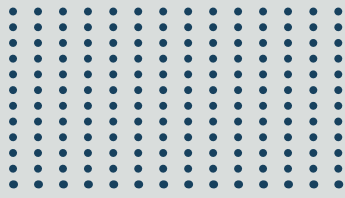
Confezione (Packaging)	N. VXB (VXB No.)	Modello (Battery Type)	IC Data (Electrochemical Composition)	Capacità (mAh) (Capacity (mAh))	Tensione (V) (Voltage (V))	Altezza (mm) (Height (mm))	Larghezza (mm) (Width (mm))	Diametro (mm) (Diameter (mm))	Volume (cm ³ /cm) (Volume (cm ³ /cm))	Peso (g) (Weight (g))
20x10 Cells Value Pack 20x10 Pacchi convenienza batterie	4003 211 111	Micro/AAA/AM 4	LR03	1250	1,5	44,5	10,5	3,8	11	
300x2 Cells Shrink Foil Pack per Carton 300x2 Pacchi batterie in pellicola termoretraibile per cartone	4003 211 302	Micro/AAA/AM 4	LR03	1250	1,5	44,5	10,5	3,8	11	
150x4 Cells Shrink Foil Pack per Carton 150x4 Pacchi batterie in pellicola termoretraibile per cartone	4003 211 304	Micro/AAA/AM 4	LR03	1250	1,5	44,5	10,5	3,8	11	
500 Single Cells per Carton 500 batterie singole per cartone	4003 211 501	Micro/AAA/AM 4	LR03	1250	1,5	44,5	10,5	3,8	11	
20x2 Cells Shrink Foil Pack per Carton 20x2 Pacchi batterie in pellicola termoretraibile per cartone	4006 211 302	Micro/AA/AM 3	LR6	2950	1,5	50,5	14,5	7,7	24	
10x4 Cells Shrink Foil Pack per Tray 10x4 Pacchi batterie in pellicola termoretraibile per vassoio	4006 211 304	Micro/AA/AM 3	LR6	2950	1,5	50,5	14,5	7,7	24	
500 Single Cells per Carton 500 batterie singole per cartone	4006 211 501	Micro/AA/AM 3	LR6	2950	1,5	50,5	14,5	7,7	24	
20 Single Cells per Tray 20 batterie singole per vassoio	4014 211 111	Baby/CIAM 2	LR14	7000	1,5	50	20,2	20,5	66	
20 Single Cells per Tray 20 batterie singole per vassoio	4020 211 111	Mini/CIAM 1	LR20	13000	1,5	61,5	34,2	31,3	130	
20 Single Cells per Tray 20 batterie singole per vassoio	4022 211 111	E-Block/S AM E	LP3146	500	8	48,5	17,5	20,8	46	
272 Single Cells per Carton 272 batterie singole per cartone	4022 211 501	E-Block/S AM S	LP3146	500	9	48,5	17,5	20,8	46	

Gamma di Temperature: da -18 °C a +50°C. 1) Perdita di capacità dopo lo stoccaggio: 4% annuo a 20°C 2) / Temperature Ranges: from -18°C to +50°C 1) / Capacity loss after storage: 4% per year at 20°C 2)

- 1) Per temperature d'uso diverse contattare VARTA Consumer Batteries GmbH & Co. KG&A.
- 2) A seconda della modalità di stoccaggio e dal tasso di scarica. Temperature elevate e alti valori di scarica implicano una maggiore perdita di capacità.

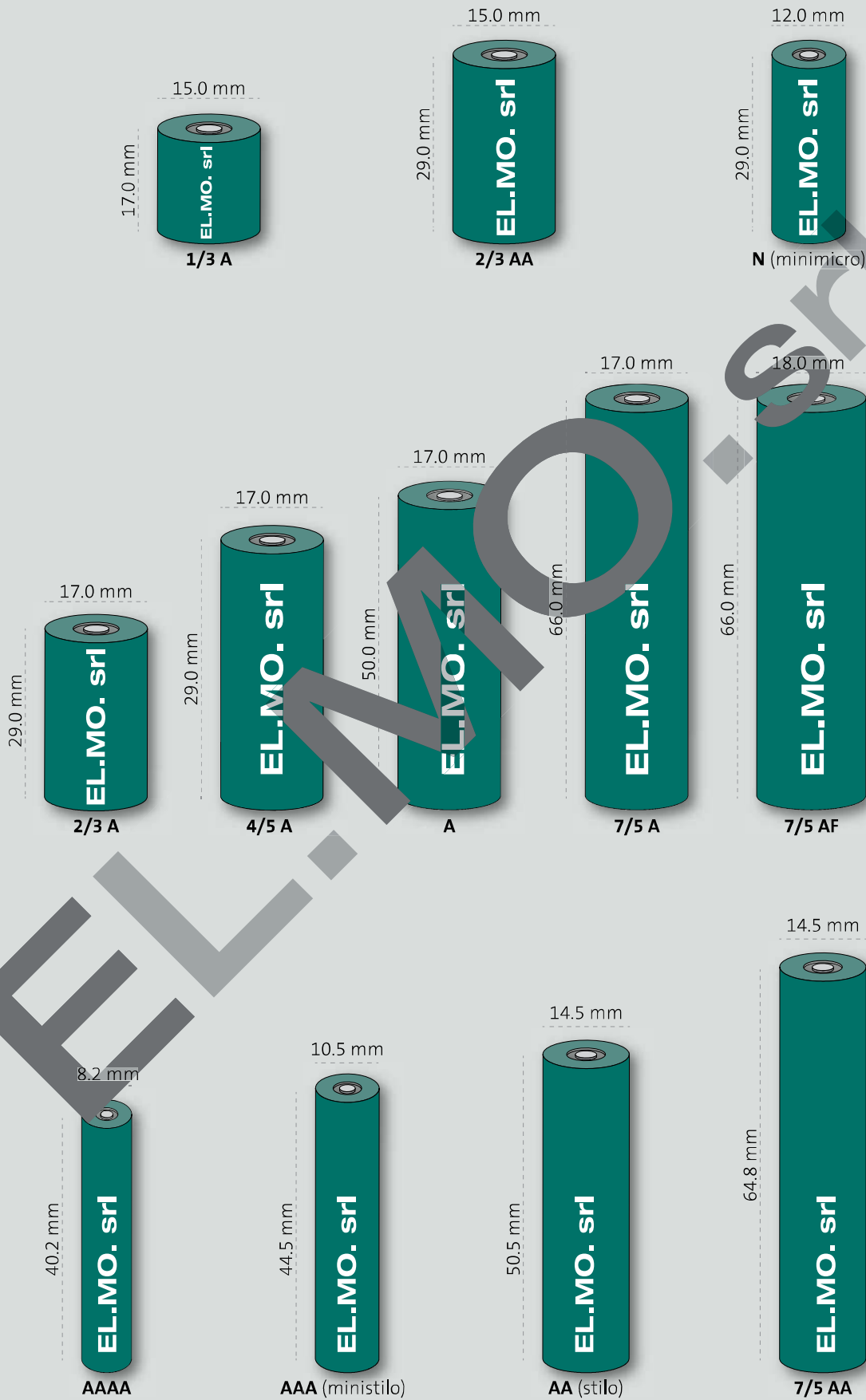
1) For different operation temperatures contact VARTA Consumer Batteries GmbH & Co. KG&A.
2) Depending on mode of storage and rate of discharge. Higher temperatures and higher discharge rates lead to higher capacity loss.

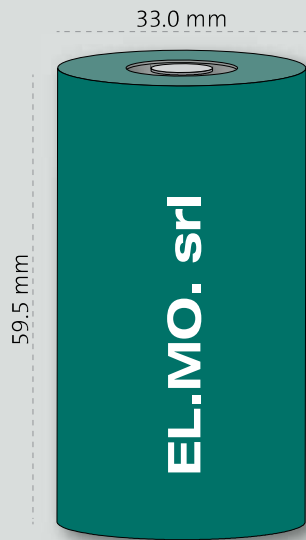




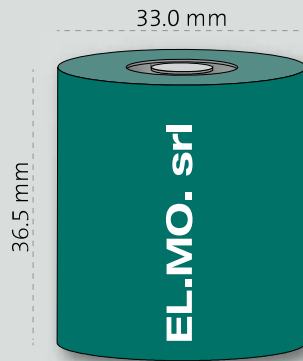
FORMATI DI IDENTIFICAZIONE CELLE

CELL IDENTIFICATION SIZES AND SHAPES

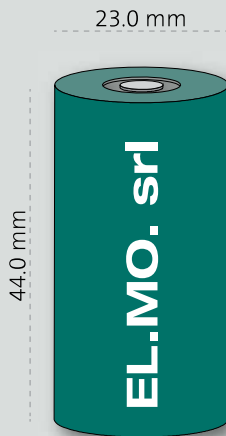




D (torcia)



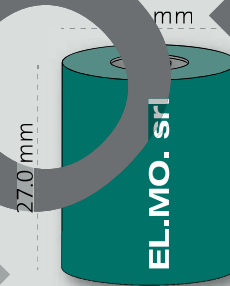
1/2 D



SC



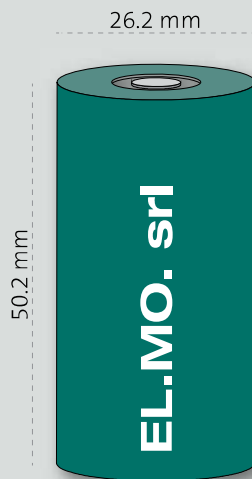
4/5 SC



2/3 SC



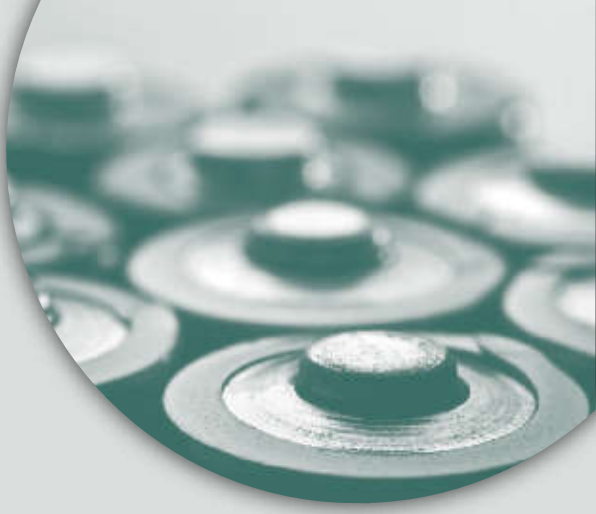
F



C (1/2 torcia)



9V



BATTERIE STANDARD NI-CD

STANDARD NI-CD BATTERIES

Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	HG-AAA50S	1/3AAA	1,2	50	<100	5	15	10,0 ± 0,5	16,0 ± 0,5	4
	HG-AAA170S	2/3AAA	1,2	170	<50	17	51	10,0 ± 0,5	30,0 ± 0,5	7
	HG-AAA300S	AAA	1,2	300	<30	30	90	10,0 ± 0,5	44,0 ± 0,5	11
	HG-AA100S	1/3AA	1,2	100	<60	10	30	14,0 ± 0,5	16,5 ± 0,5	7
	HG-AA280S	2/3AA	1,2	280	<39	28	84	14,0 ± 0,5	30,0 ± 0,5	13
	HG-AA300S	2/3AA	1,2	300	<39	30	105	14,0 ± 0,5	30,0 ± 0,5	13
	HG-AA320S	2/3AA	1,2	320	<39	32	96	14,0 ± 0,5	30,0 ± 0,5	14
	HG-AA350S	2/3AA	1,2	350	<39	35	105	14,0 ± 0,5	30,0 ± 0,5	14
	HG-AA600S	AA	1,2	600	<18	60	180	14,0 ± 0,5	50,0 ± 0,5	22
	HG-AA700S	AA	1,2	700	<18	70	210	14,0 ± 0,5	50,0 ± 0,5	23
	HG-AA800S	AA	1,2	800	<18	80	240	14,0 ± 0,5	50,0 ± 0,5	24
	HG-AA900S	AA	1,2	900	<25	90	270	14,0 ± 0,5	50,0 ± 0,5	24
	HG-AA1000S	AA	1,2	1000	<25	100	300	14,0 ± 0,5	50,0 ± 0,5	25
	HG-AA1100S	AA	1,2	1100	<25	110	330	14,0 ± 0,5	50,0 ± 0,5	26
	HG-AA1000S	7/5AA	1,2	1000	<16	100	300	14,0 ± 0,5	64,5 ± 0,5	30
	HG-AA1100S	7/5AA	1,2	1100	<16	110	330	14,0 ± 0,5	64,5 ± 0,5	31
	HG-AA1200S	7/5AA	1,2	1200	<16	120	360	14,0 ± 0,5	64,5 ± 0,5	32
	HG-A600S	2/3A	1,2	600	<22	60	180	16,5 ± 0,5	28,5 ± 0,5	21
	HG-A650S	2/3A	1,2	650	<22	65	195	16,5 ± 0,5	28,5 ± 0,5	22
	HG-A700S	2/3A	1,2	700	<22	70	210	16,5 ± 0,5	28,5 ± 0,5	22
	HG-A1000S	4/5A	1,2	1000	<13	100	300	16,5 ± 0,5	42,5 ± 0,5	30
	HG-A1200S	A	1,2	1200	<10	120	360	16,5 ± 0,5	49,5 ± 0,5	38
	HG-A1400S	A	1,2	1400	<10	140	420	16,5 ± 0,5	49,5 ± 0,5	40
	HG-SC700S	1/2SC	1,2	700	<18	70	210	22,5 ± 0,5	26,5 ± 0,5	30
	HG-SC800S	1/2SC	1,2	800	<18	80	240	22,5 ± 0,5	26,5 ± 0,5	30
	HG-SC1100S	4/5SC	1,2	1100	<13	110	330	22,5 ± 0,5	33,5 ± 0,5	38
	HG-SC1200S	4/5SC	1,2	1200	<13	120	360	22,5 ± 0,5	33,5 ± 0,5	39
	HG-SC1300S	4/5SC	1,2	1300	<13	130	390	22,5 ± 0,5	33,5 ± 0,5	40
	HG-SC1300S	SC	1,2	1300	<11	130	390	22,5 ± 0,5	42,5 ± 0,5	49
	HG-SC1400S	SC	1,2	1400	<11	140	420	22,5 ± 0,5	42,5 ± 0,5	50
	HG-SC1500S	SC	1,2	1500	<10	150	450	22,5 ± 0,5	42,5 ± 0,5	51
	HG-SC1700S	SC	1,2	1700	<10	170	510	22,5 ± 0,5	42,5 ± 0,5	53
	HG-SC1800S	SC	1,2	1800	<9	180	540	22,5 ± 0,5	42,5 ± 0,5	54
	HG-SC1900S	SC	1,2	1900	<8	190	570	22,5 ± 0,5	42,5 ± 0,5	54
	HG-SC2000S	SC	1,2	2000	<8	200	600	22,5 ± 0,5	42,5 ± 0,5	56
	HG-SC2100S	SC	1,2	2100	<8	210	630	22,5 ± 0,5	42,5 ± 0,5	56
	HG-SC2200S	SC	1,2	2200	<8	220	660	22,5 ± 0,5	42,5 ± 0,5	57
	HG-C1200S	2/3C	1,2	1200	<10	120	360	25,5 ± 0,5	30,5 ± 0,5	41
	HG-C2000S	C	1,2	2000	<9	200	660	25,5 ± 0,5	49,5 ± 0,5	72
	HG-C2200S	C	1,2	2200	<9	220	160	25,5 ± 0,5	49,5 ± 0,5	73
	HG-C2500S	C	1,2	2500	<9	250	750	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C2800S	C	1,2	2800	<9	280	840	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C3000S	C	1,2	3000	≤15	300	900	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C3300S	C	1,2	3300	≤15	330	990	25,5 ± 0,5	49,5 ± 0,5	78
	HG-D2200S	1/2D	1,2	2200	≤9	220	660	32,5 ± 0,5	35,5 ± 0,5	75
	HG-D2500S	1/2D	1,2	2500	<9	250	750	32,5 ± 0,5	35,5 ± 0,5	75
	HG-D4000S	D	1,2	4000	<6	400	1200	32,5 ± 0,5	59,5 ± 0,5	136
	HG-D4500S	D	1,2	4500	<6	450	1350	32,5 ± 0,5	59,5 ± 0,5	139
	HG-D5000S	D	1,2	5000	<5,5	500	1500	32,5 ± 0,5	59,5 ± 0,5	142
	HG-D5500S	D	1,2	5500	<5,5	550	1650	32,5 ± 0,5	59,5 ± 0,5	148
	HG-M5000S	M	1,2	5000	<6,0	500	1500	36,0 ± 0,5	47,5 ± 0,5	138
	HG-F7000S	F	1,2	7000	<4,0	700	2100	32,5 ± 0,5	90,0 ± 0,5	215
	HG-F8000S	F	1,2	8000	<4,0	800	2400	32,5 ± 0,5	90,5 ± 0,5	220



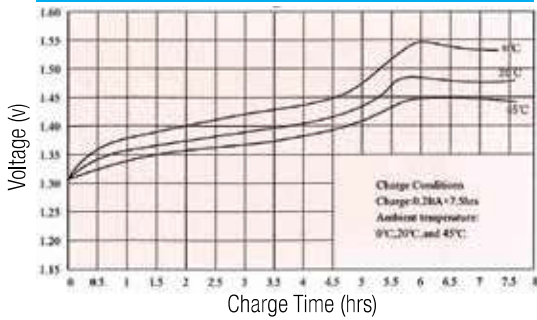
CARATTERISTICHE

MAIN CHARACTERISTICS

Elettrodo positivo sinterizzato. Elettrodo negativo depositato elettricamente. Tecnologia di saldatura avanzata che garantisce una migliore qualità delle celle NI-CD. Le nostre celle sono a basso effetto memoria.

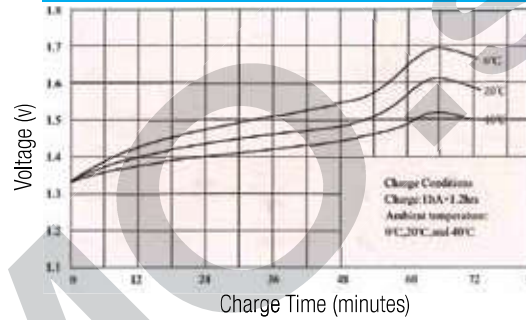
Sintered positive electrode. Electrodeposited negative electrode. Advanced welding technology granting a better quality of Ni-CD cells. Our cells feature a low memory effect.

CHARGE CHARACTERISTICS



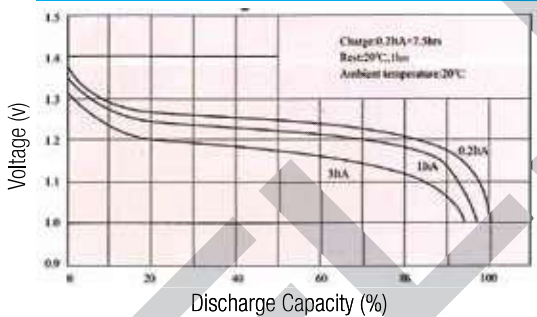
Charging at 0,21A at different temperatures

CHARGE CHARACTERISTICS



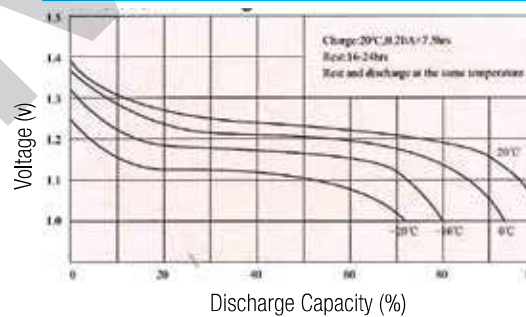
Charging at 1 ItA at different temperatures

DISCHARGE CHARACTERISTICS



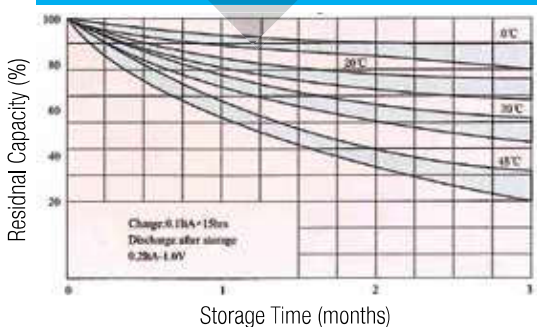
Discharging at different rate at 20°C

DISCHARGE CHARACTERISTICS



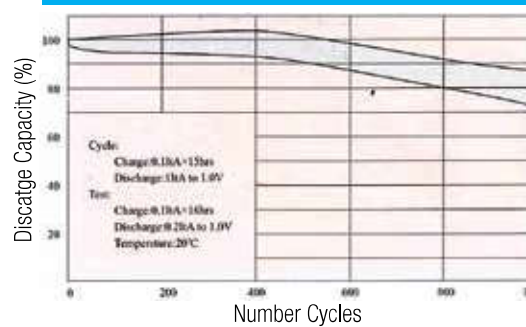
Discharging at 1 ItA at different temperatures

SELF-DISCHARGE CHARACTERISTICS



Self - discharge characteristics at different storage temperatures

CYCLE CHARACTERISTICS



Cycle characteristics in standard charging and discharging conditions

BATTERIE HIGH POWER NI-CD

HIGH POWER NI-CD BATTERIES

Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	HG-AAA80P	1/3 AAA	1,2	80	<65	8	24	10,0 ± 0,5	16,0 ± 0,5	5
	HG-AAA170P	2/3 AAA	1,2	170	<40	17	51	10,0 ± 0,5	30,0 ± 0,5	7
	HG-AAA300P	AAA	1,2	300	<18	30	90	10,0 ± 0,5	44,0 ± 0,5	11
	HG-AA100P	1/3 AA	1,2	100	<55	10	30	14,0 ± 0,5	16,5 ± 0,5	8
	HG-AA300P	2/3 AA	1,2	300	<30	30	90	14,0 ± 0,5	30,0 ± 0,5	14
	HG-AA700P	AA	1,2	700	<15	70	210	14,0 ± 0,5	50,0 ± 0,5	23
	HG-AA800P	AA	1,2	800	<14	80	240	14,0 ± 0,5	50,0 ± 0,5	24
	HG-AA900P	AA	1,2	900	<25	90	270	14,0 ± 0,5	50,0 ± 0,5	24
	HG-AA1000P	AA	1,2	1000	<25	100	300	14,0 ± 0,5	50,0 ± 0,5	25
	HG-A650P	2/3 A	1,2	650	<20	65	195	16,5 ± 0,5	28,5 ± 0,5	22
	HG-A1200P	A	1,2	1200	<9	120	360	16,5 ± 0,5	49,5 ± 0,5	38
	HG-A1400P	A	1,2	1400	<9	140	420	16,5 ± 0,5	49,5 ± 0,5	40
	HG-SC700P	1/2 SC	1,2	700	<15	70	210	22,5 ± 0,5	26,0 ± 0,5	31
	HG-SC800P	1/2 SC	1,2	800	<20	80	240	22,5 ± 0,5	26,0 ± 0,5	31
	HG-SC1100P	4/5 SC	1,2	1100	<12	110	330	22,5 ± 0,5	33,5 ± 0,5	38
	HG-SC1200P	4/5 SC	1,2	1200	<10	120	360	22,5 ± 0,5	33,5 ± 0,5	39
	HG-SC1300P	4/5 SC	1,2	1300	<12	130	390	22,5 ± 0,5	33,5 ± 0,5	40
	HG-SC1400P	4/5 SC	1,2	1400	<12	140	420	22,5 ± 0,5	33,5 ± 0,5	41
	HG-SC1300P	SC	1,2	1300	<6,5	130	390	22,5 ± 0,5	42,5 ± 0,5	49
	HG-SC1400P	SC	1,2	1400	<6,5	140	420	22,5 ± 0,5	42,5 ± 0,5	50
	HG-SC1500P	SC	1,2	1500	<6,0	150	450	22,5 ± 0,5	42,5 ± 0,5	51
	HG-SC1700P	SC	1,2	1700	<5,5	170	510	22,5 ± 0,5	42,5 ± 0,5	53
	HG-SC1800P	SC	1,2	1800	<5	180	540	22,5 ± 0,5	42,5 ± 0,5	54
	HG-SC1900P	SC	1,2	1900	<5	190	570	22,5 ± 0,5	42,5 ± 0,5	54
	HG-SC2000P	SC	1,2	2000	<5	200	600	22,5 ± 0,5	42,5 ± 0,5	56
	HG-SC2100P	SC	1,2	2100	<4,5	210	630	22,5 ± 0,5	42,5 ± 0,5	56
	HG-SC2200P	SC	1,2	2200	<4,5	220	660	22,5 ± 0,5	42,5 ± 0,5	57
	HG-C1200P	2/3 SC	1,2	1200	<8	120	360	25,5 ± 0,5	30,5 ± 0,5	41
	HG-C2200P	C	1,2	2200	<6,5	220	660	25,5 ± 0,5	49,5 ± 0,5	73
	HG-C2500P	C	1,2	2500	<6,5	250	750	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C2800P	C	1,2	2800	<6,5	280	840	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C3000P	C	1,2	3000	<15	300	900	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C3300P	C	1,2	3300	<15	330	900	25,5 ± 0,5	49,5 ± 0,5	78
	HG-D2200P	1/2 D	1,2	2200	<8	220	660	25,5 ± 0,5	35,5 ± 0,5	73
	HG-D2500P	1/2 D	1,2	2500	<8	250	750	25,5 ± 0,5	35,5 ± 0,5	76
	HG-D4000P	D	1,2	4000	<4,5	400	1200	32,5 ± 0,5	59,0 ± 0,5	142
	HG-D4500P	D	1,2	4500	<4,5	450	1350	32,5 ± 0,5	59,0 ± 0,5	145
	HG-D5000P	D	1,2	5000	<4,5	550	1650	32,5 ± 0,5	59,0 ± 0,5	148
	HG-D5500P	D	1,2	5500	<4,5	550	1650	32,5 ± 0,5	59,0 ± 0,5	150
	HG-F7500P	F	1,2	7500	<3,5	750	2250	32,5 ± 0,5	90,0 ± 0,5	230
	HG-F8000P	F	1,2	8000	<3,5	800	2400	32,5 ± 0,5	90,0 ± 0,5	235



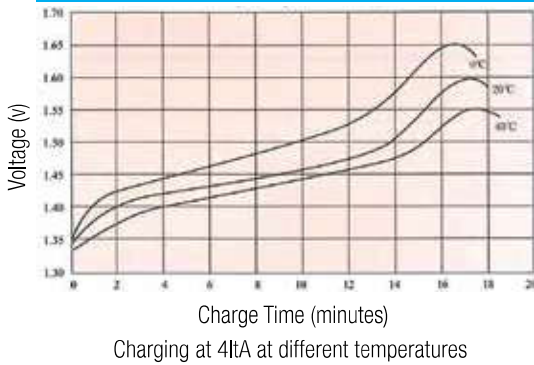
CARATTERISTICHE

MAIN CHARACTERISTICS

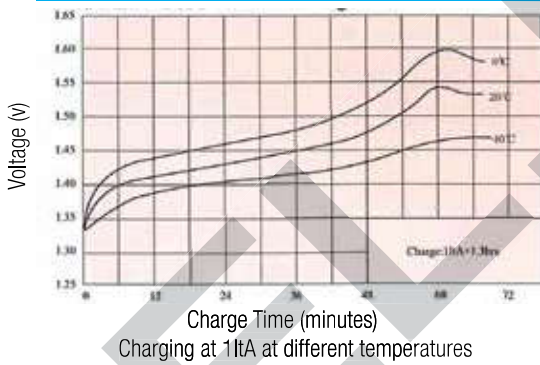
Elettrodo positivo sinterizzato. Elettrodo negativo sinterizzato o depositato elettricamente. Tecnologia di saldatura avanzata. Questa particolare tecnologia garantisce la minima resistenza interna ed una elevata corrente di scarica. Le celle NI-CD alta scarica possono essere caricate in 15-30 minuti.

Sintered positive electrode. Electrodeposited or sintered negative electrode. Advanced welding technology. This special technology assures the lowest internal resistance and the highest discharge current. The high-discharge NI-CD batteries can be charged in 15-30 minutes.

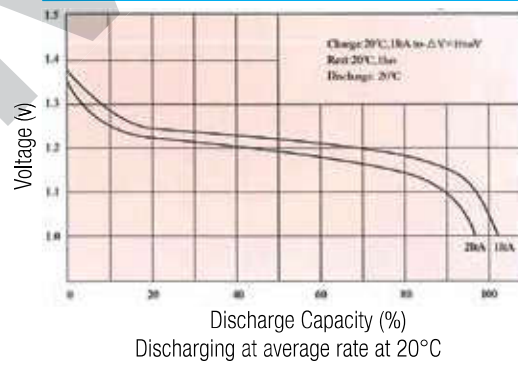
SUPER-QUICK CHARGE CHARACTERISTICS



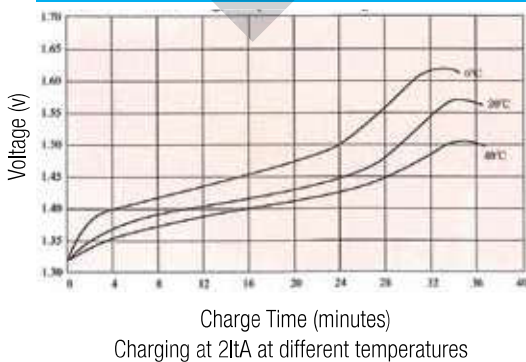
QUICK CHARGE CHARACTERISTICS



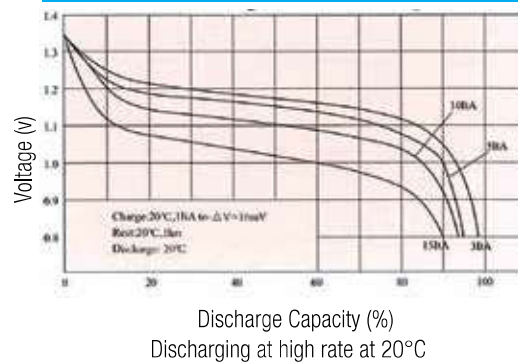
AVERAGE RATE DISCHARGE



HIGH-SPEED CHARGE CHARACTERISTICS



HIGH RATE DISCHARGE



BATTERIE ALTA TEMPERATURA NI-CD

HIGH-TEMP NI-CD BATTERIES

Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	HG-AA300H	2/3 AAA	1,2	300	<44	30	90	14,0 ± 0,5	28,0 ± 0,5	13
	HG-AA600H	AA	1,2	600	<20	60	180	14,0 ± 0,5	50,0 ± 0,5	23
	HG-AA700H	AA	1,2	700	<20	70	210	14,0 ± 0,5	50,0 ± 0,5	23
	HG-AA800		1,2	800	<20	90	270			26
	HG-AA1000H	7/5 AA	1,2	1000	<18	100	300	14,0 ± 0,5	64,5 ± 0,5	30
	HG-A600H	2/3 A	1,2	600	<24	60	180	16,5 ± 0,5	28,5 ± 0,5	22
	HG-A1000H	4/5 A	1,2	1000	<13	100	300	16,5 ± 0,5	42,5 ± 0,5	30
	HG-A1200H	A	1,2	1200	<11	120	360	16,5 ± 0,5	49,5 ± 0,5	40
	HG-SC1300H	SC	1,2	1300	<13	130	390	22,5 ± 0,5	42,5 ± 0,5	50
	HG-SC1500H	SC	1,2	1500	<13	150	450	22,5 ± 0,5	42,5 ± 0,5	52
	HG-SC1600		1,2	1600	<13	160	480			53
	HG-SC1700H	SC	1,2	1700	<13	170	510	22,5 ± 0,5	42,5 ± 0,5	53
	HG-C1200H	2/3 C	1,2	1200	<11	120	360	25,5 ± 0,5	30,5 ± 0,5	41
	HG-C2000H	C	1,2	2000	<11	200	600	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C2200H	C	1,2	2200	<10	220	660	25,5 ± 0,5	49,5 ± 0,5	75
	HG-C2500H	C	1,2	2500	<10	250	750	25,5 ± 0,5	49,5 ± 0,5	77
	HG-D2200H	1/2 D	1,2	2200	<10	220	660	32,5 ± 0,5	33,5 ± 0,5	75
	HG-D4000H	D	1,2	4000	<7	400	1200	32,5 ± 0,5	59,0 ± 0,5	139
	HG-D4500H	D	1,2	4500	<7	450	1350	32,5 ± 0,5	59,0 ± 0,5	142
	HG-D5000H	D	1,2	5000	<6,5	500	1500	32,5 ± 0,5	59,0 ± 0,5	145
	HG-F7000H	F	1,2	7000	<5,0	700	2100	32,5 ± 0,5	90,0 ± 0,5	230
	HG-F8000H	F	1,2	8000	<5,0	800	2400	32,5 ± 0,5	90,0 ± 0,5	235



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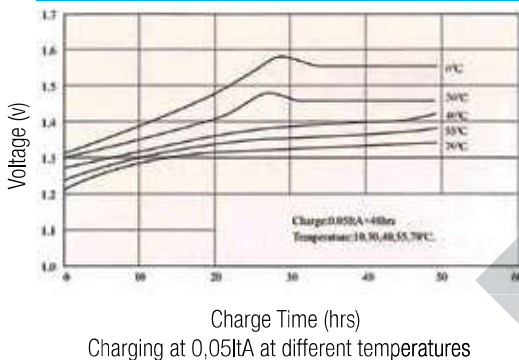
CARATTERISTICHE

MAIN CHARACTERISTICS

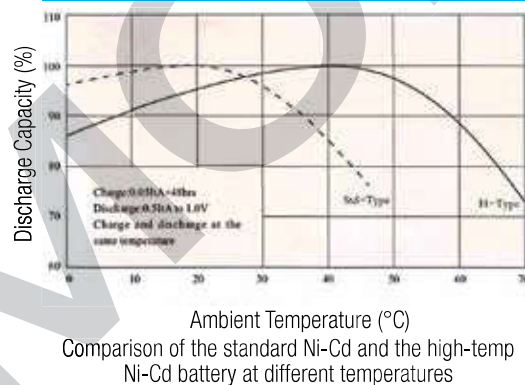
Elettrodo positivo sinterizzato. Elettrodo negativo elettricamente depositato. Tecnologia di saldatura avanzata. Basso effetto memoria per batterie ad alta temperatura. Ampio range di funzionamento a temperature da -20° a +70°. Elevata efficienza di carica in mantenimento a temperature da 50 a 70°C.

Sintered positive electrode. Electrodeposited negative electrode. Advanced welding technology. Low memory effect for high temperature batteries. Wide operating range at temperatures ranging from -20° to +70°. High charging efficiency maintained at 0,05ItA at temperatures from 50 to 70°C.

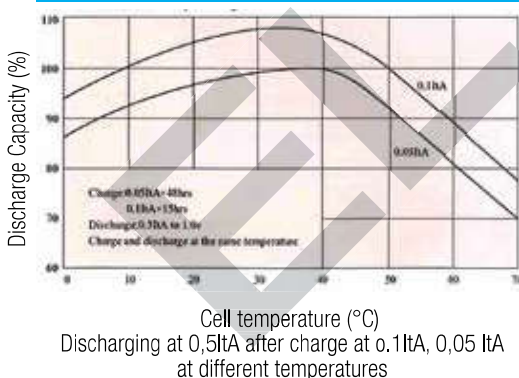
CHARGE CHARACTERISTICS



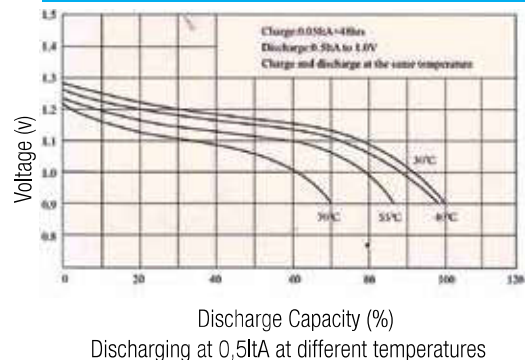
TEMPERATURE CHARACTERISTICS



CAPACITY CHARACTERISTICS




DISCHARGE CHARACTERISTICS



BATTERIE STANDARD NI-MH

STANDARD NI-MH HYDRIDE BATTERIES



Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	HQ-AAA80S	1/3 AAA	1,2	80	<120	8	24	10,0 ± 0,5	16,0 ± 0,5	3,5
	HQ-AAA280S	2/3 AAA	1,2	280	<45	28	84	10,0 ± 0,5	28,0 ± 0,5	7
	HQ-AAA700S	AAA	1,2	700	<28	70	210	10,0 ± 0,5	44,0 ± 0,5	12
	HQ-AA800S	2/3 AA	1,2	800	<30	80	240	14,0 ± 0,5	30,0 ± 0,5	14
	HQ-AA1200S	AA	1,2	1200	<22	120	360	14,0 ± 0,5	50,0 ± 0,5	26
	HQ-AA1400S	AA	1,2	1400	<22	140	420	14,0 ± 0,5	50,0 ± 0,5	28
	HQ-AA1600S	AA	1,2	1600	<23	160	480	14,0 ± 0,5	50,0 ± 0,5	30
	HQ-AA1800S	AA	1,2	1800	<25	180	540	14,0 ± 0,5	50,0 ± 0,5	31
	HQ-AA2000S	AA	1,2	2000	<30	200	600	14,0 ± 0,5	50,0 ± 0,5	32
	HQ-AA2200S	AA	1,2	2200	<30	220	660	14,0 ± 0,5	50,0 ± 0,5	33
	HQ-AA2400S	AA	1,2	2400	<30	240	720	14,0 ± 0,5	50,0 ± 0,5	36
	HQ-A2800S	A	1,2	2800	<20	280	840	16,5 ± 0,5	49,5 ± 0,5	40
	HQ-A3000S	A	1,2	3000	<20	300	900	16,5 ± 0,5	49,5 ± 0,5	42
	HQ-A3200S	7/5 A	1,2	3200	<20	320	960	16,5 ± 0,5	66,5 ± 0,5	55
	HA-A3500S	7/5 A	1,2	3500	<20	350	1050	16,5 ± 0,5	66,5 ± 0,5	56
	HQ-SC1000S	1/2 SC	1,2	1000	<8	100	300	22,5 ± 0,5	26,0 ± 0,5	32
	HQ-SC1800S	4/5 SC	1,2	1800	<7	180	540	22,5 ± 0,5	33,5 ± 0,5	36
	HQ-SC2000S	4/5 SC	1,2	2000	<7	200	600	22,5 ± 0,5	33,5 ± 0,5	38
	HQ-SC2200S	4/5 SC	1,2	2200	<7	220	660	22,5 ± 0,5	33,5 ± 0,5	40
	HQ-SC1300	SC	1,2	1300	<6	130	390	22,5 ± 0,5	42,5 ± 0,5	45
	HQ-SC1500	SC	1,2	1500	<6	150	450	22,5 ± 0,5	42,5 ± 0,5	48
	HQ-SC1700	SC	1,2	1700	<6	170	510	22,5 ± 0,5	42,5 ± 0,5	50
	HQ-SC1900	SC	1,2	1900	<6	190	540	22,5 ± 0,5	42,5 ± 0,5	54
	HQ-SC2000S	SC	1,2	2000	<5	200	600	22,5 ± 0,5	42,5 ± 0,5	58
	HQ-SC2200S	SC	1,2	2200	<5	220	660	22,5 ± 0,5	42,5 ± 0,5	60
	HQ-SC2500S	SC	1,2	2500	<6	250	750	22,5 ± 0,5	42,5 ± 0,5	55
	HQ-SC2800S	SC	1,2	2800	<6	280	840	22,5 ± 0,5	42,5 ± 0,5	57
	HQ-SC3000S	SC	1,2	3000	<6	300	900	22,5 ± 0,5	42,5 ± 0,5	59
	HQ-SC3200S	SC	1,2	3200	<7	320	960	22,5 ± 0,5	42,5 ± 0,5	60
	HQ-SC3600S	SC	1,2	3600	<7	360	1080	22,5 ± 0,5	42,5 ± 0,5	60
	HQ-C3500S	C	1,2	3500	<7	350	1050	25,5 ± 0,5	49,5 ± 0,5	75
	HQ-C4000S	C	1,2	4000	<6	400	1200	25,5 ± 0,5	49,5 ± 0,5	80
	HQ-C4500S	C	1,2	4500	<7	450	1350	25,5 ± 0,5	49,5 ± 0,5	85
	HQ-D7000S	D	1,2	7000	<5	700	2100	32,5 ± 0,5	59,0 ± 0,5	160
	HQ-D7500S	D	1,2	7500	<5	750	2250	32,5 ± 0,5	59,0 ± 0,5	165
	HQ-D8000S	D	1,2	8000	<6	800	2400	32,5 ± 0,5	59,0 ± 0,5	170
	HQ-D8500S	D	1,2	8500	<6	850	2550	32,5 ± 0,5	59,0 ± 0,5	180
	HQ-F12000S	E	1,2	12000	<4	1200	3600	32,5 ± 0,5	90,0 ± 0,5	260
	HQ-F13000	F	1,2	13000	<5	1300	3900	32,5 ± 0,5	90,0 ± 0,5	270

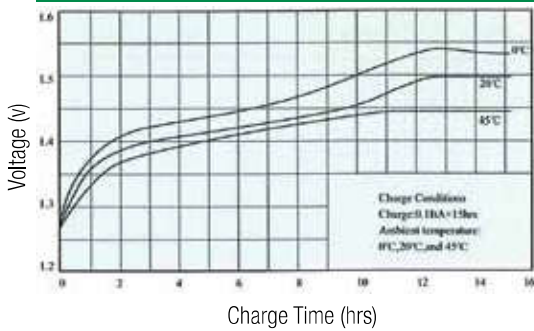
CARATTERISTICHE

MAIN CHARACTERISTICS

Tecnica di produzione all'avanguardia, ottime omogeneità di produzione e prestazioni, lunga durata. Ampia gamma di temperature, basso rapporto di innalzamento della temperatura durante la fase di carica.

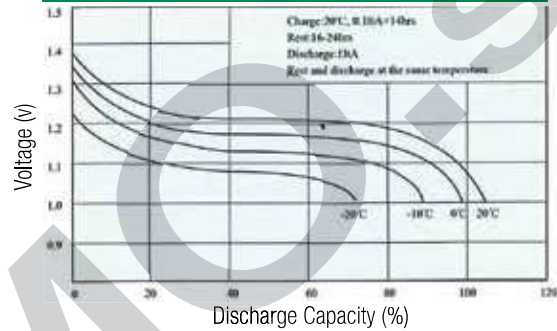
State-of-the-art production technique, excellent production uniformity and performance, long life. Wide range of temperatures, low ratio of temperature rising during the charging phase.

STANDARD CHARGE CHARACTERISTICS



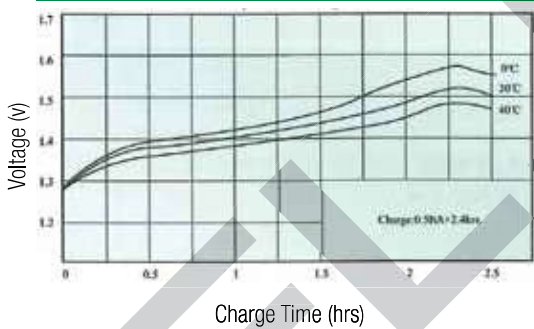
Charging at 0.11A at different temperatures

DISCHARGE CHARACTERISTICS



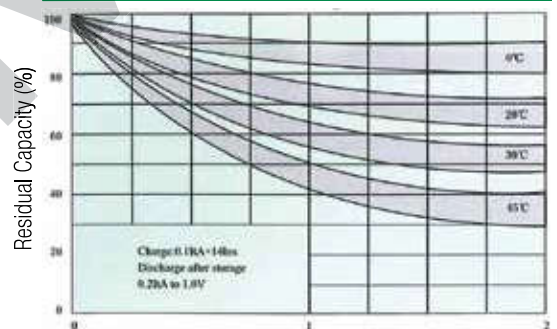
Discharging at 10A at different temperatures

RAPID CHARGE CHARACTERISTICS



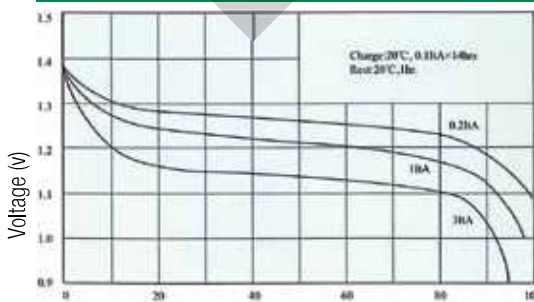
Charging at 0.51A at different temperatures

SELF-DISCHARGE CHARACTERISTICS



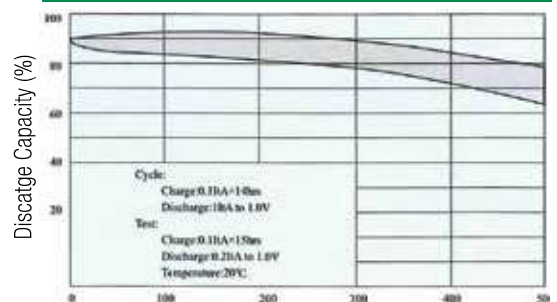
Self-discharging at different storage temperatures

DISCHARGE CHARACTERISTICS



Discharging at 20°C

CYCLE CHARACTERISTICS



Cycle characteristics in standard charging and discharging conditions at 20°C

BATTERIE HIGH POWER NI-MH

HIGH POWER NI-MH HYDRIDE BATTERIES

Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	HQ-AA700P	2/3 AA	1,2	700	<25	70	700(1ItA)	14,0 ± 0,5	30,0 ± 0,5	7,5
	HQ-AA1300P	AA	1,2	1300	<10	150	1300(1ItA)	14,0 ± 0,5	50,0 ± 0,5	26
	HQ-AA1500P	AA	1,2	1500	<12	160	1500(1ItA)	14,0 ± 0,5	50,0 ± 0,5	28
	HQ-SC2000P	4/5 SC	1,2	2000	<5	200	2000(1ItA)	22,5 ± 0,5	33,5 ± 0,5	42
	HQ-A2800P	7/5 A	1,2	2800	<10	280	2800(1ItA)	16,5 ± 0,5	66,5 ± 0,5	55
	HQ-A3000P	7/5 A	1,2	3000	<10	300	3000(1ItA)	16,5 ± 0,5	66,5 ± 0,5	56
	HQ-SC1000P	1/2 SC	1,2	1000	<5	100	1000(1ItA)	22,5 ± 0,5	26,0 ± 0,5	33
	HQ-SC2000P	SC	1,2	2000	<4	200	2000(1ItA)	22,5 ± 0,5	42,5 ± 0,5	58
	HQ-SC2200P	SC	1,2	2200	<4	220	2200(1ItA)	22,5 ± 0,5	42,5 ± 0,5	60
	HQ-SC2500P	SC	1,2	2500	<4	250	2500(1ItA)	22,5 ± 0,5	42,5 ± 0,5	55
	HQ-SC2800P	SC	1,2	2800	<5	280	2800(1ItA)	22,5 ± 0,5	42,5 ± 0,5	57
	HQ-SC3000P	SC	1,2	3000	<5	300	3000(1ItA)	22,5 ± 0,5	42,5 ± 0,5	58
	HQ-C3500P	C	1,2	3500	<4	350	3500(1ItA)	25,5 ± 0,5	49,5 ± 0,5	75
	HQ-C4000P	C	1,2	4000	<4	400	2000(0,5ItA)	25,5 ± 0,5	49,5 ± 0,5	80
	HQ-D7000P	D	1,2	7000	<3,5	700	3500(0,5ItA)	32,5 ± 0,5	59,0 ± 0,5	160
	HQ-D8000P	D	1,2	8000	<4	800	4000(0,5ItA)	32,5 ± 0,5	59,0 ± 0,5	170
	HQ-D8500P	D	1,2	8500	<4	8500	4300(0,5ItA)	32,5 ± 0,5	59,0 ± 0,5	180
	HQ-F12000P	F	1,2	12000	<3	1200	6000(0,5ItA)	32,5 ± 0,5	90,0 ± 0,5	260
	HQ-F13000P	F	1,2	13000	<4	1300	6500(0,5ItA)	32,5 ± 0,5	90,0 ± 0,5	270



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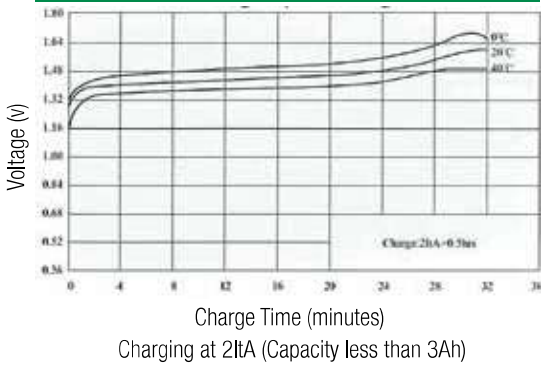
CARATTERISTICHE

MAIN CHARACTERISTICS

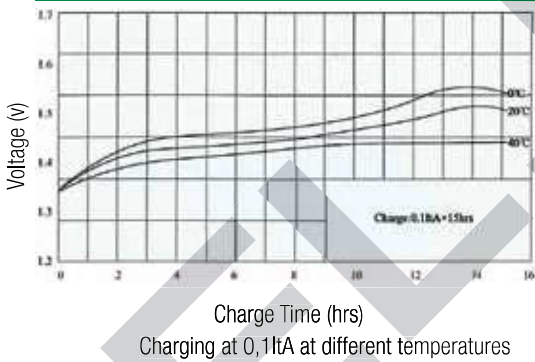
Saldatura automatizzata. Basso rapporto di innalzamento della temperatura durante la fase di carica. Una particolare tecnologia garantisce la minima resistenza interna alla massima corrente di scarica. Le batterie possono essere caricate in modo rapido.

Automated welding. Low ratio of temperature rising during the charging phase. A special technology assures the lowest internal resistance and the highest discharge current. The batteries can be charged with a fast charge mode.

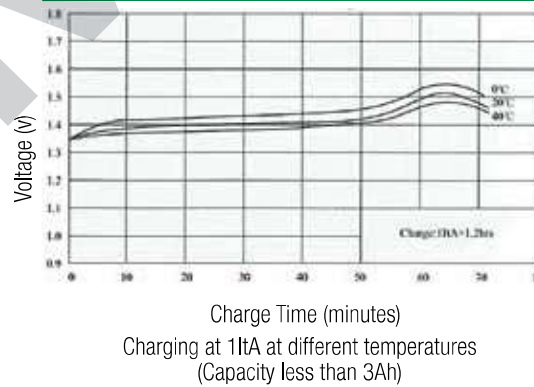
HIGH-SPEED CHARGE CHARACTERISTICS



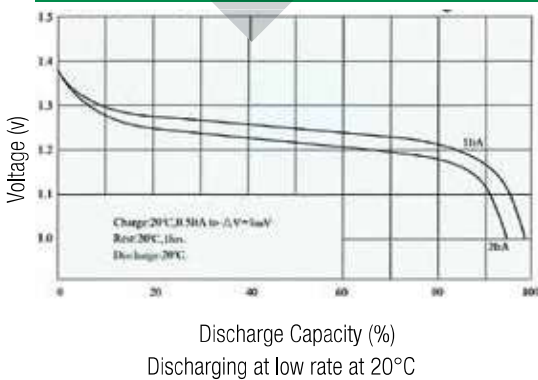
STANDARD CHARGE CHARACTERISTICS



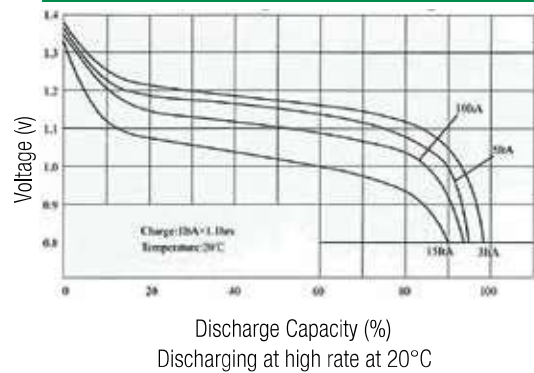
QUICK CHARGE CHARACTERISTICS



MIDDLE RATE DISCHARGE




HIGH RATE DISCHARGE



BATTERIE SUPER FAST CHARGE NI-MH

SUPER FAST POWER NI-MH HYDRIDE BATTERIES

Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	TQN-SC1000P	1/2SC	1,2	1000	<5	1000	4000(4ItA)	22,5 ± 0,5	26,0 ± 0,5	33
	TQN-SC2000P	SC	1,2	2000	<4	2000	8000(4ItA)	22,5 ± 0,5	42,5 ± 0,5	58
	TQN-SC2200P	SC	1,2	2200	<4	2200	8800(4ItA)	22,5 ± 0,5	42,5 ± 0,5	60
	TQN-SC2500P	SC	1,2	2500	<4	2500	10000(4ItA)	22,5 ± 0,5	42,5 ± 0,5	55
	TQN-SC2800P	SC	1,2	2800	<5	2800	11200(4ItA)	22,5 ± 0,5	42,5 ± 0,5	57
	TQN-SC3000P	SC	1,2	3000	<5	3000	12000(4ItA)	22,5 ± 0,5	42,5 ± 0,5	58

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supporto tecnico,
produttivo
e logistico

*technical,
production &
logistic support*



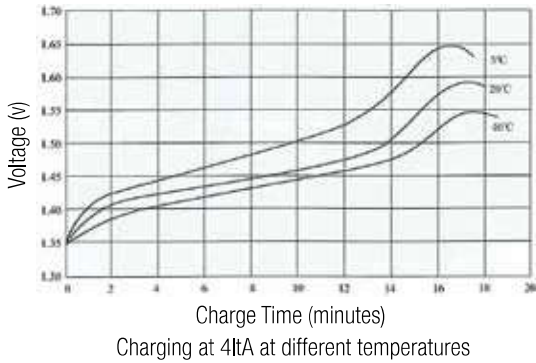
CARATTERISTICHE

MAIN CHARACTERISTICS

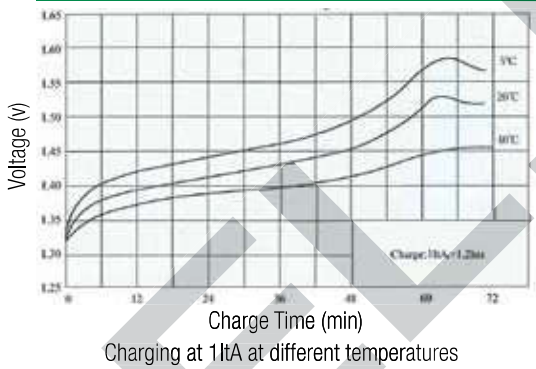
Tecnica di produzione all'avanguardia. Saldatura automatizzata, qualità omogenea e affidabile. Possono essere caricate in 15 min. Elevatissima velocità di scarica. Basso rapporto di innalzamento della temperatura durante carica e scarica. Lunga durata con carica e scarica a velocità elevata.

State-of-the-art production technique. Automated welding technology, uniform and reliable quality. Batteries can be charged in 15 min. Extra fast discharge rate. Low ratio of temperature rising during charge and discharge. Long life with fast-rate charge and discharge.

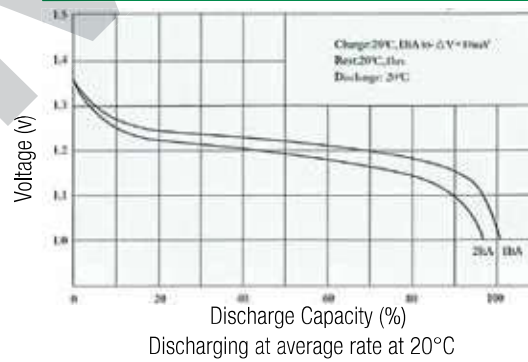
SUPER-QUICK CHARGE CHARACTERISTICS



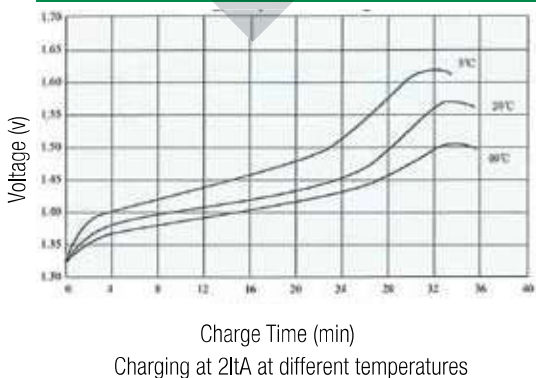
QUICK CHARGE CHARACTERISTICS



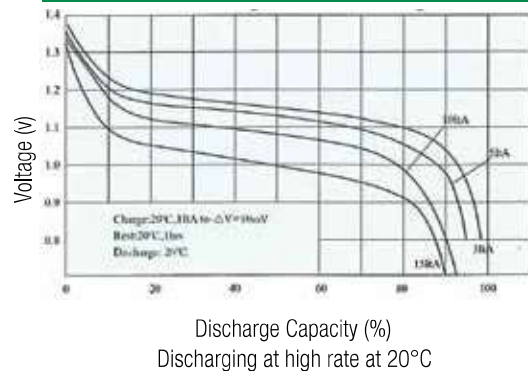
AVERAGE RATE DISCHARGE



HIGH-SPEED CHARGE CHARACTERISTICS




HIGH RATE DISCHARGE



BATTERIE ALTA TEMPERATURA NI-MH

HIGH TEMPERATURE NI-MH HYDRIDE BATTERIES



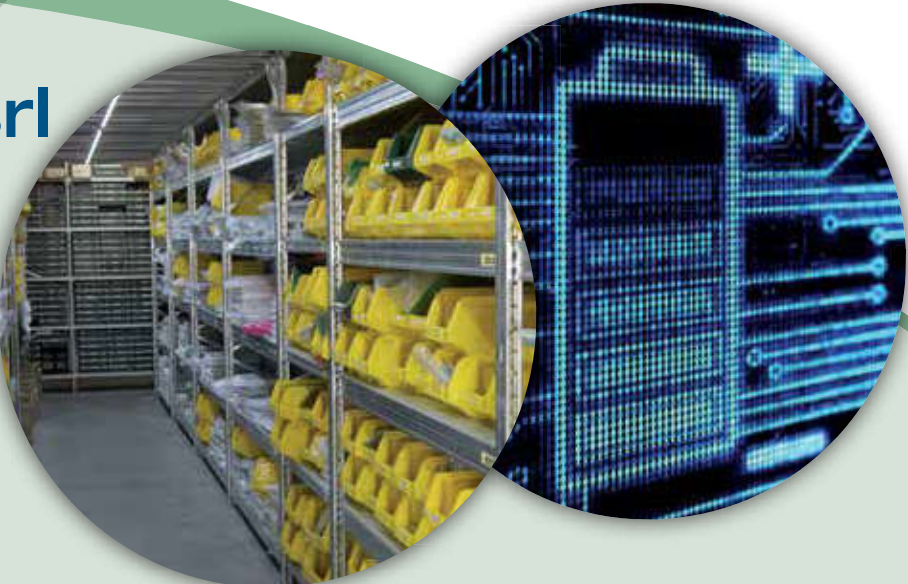
Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Std Charge mAx15Hrs	Rapid Charge mAx4Hrs	Dimension (mm)		Approx Weight(g)
								Diameter	Height	
	HQ-AA1200H	AA	1,2	1200	<28	120	360	14,0 ± 0,5	50,0 ± 0,5	28
	HQ-AA1400H	AA	1,2	1200	<28	140	420	14,0 ± 0,5	50,0 ± 0,5	28
	HQ-AA1600H	AA	1,2	1600	<28	160	480	14,0 ± 0,5	50,0 ± 0,5	28
	HQ-A2000H	A	1,2	2000	<26	200	600	16,5 ± 0,5	49,5 ± 0,5	37
	HQ-A2800H	7/5 A	1,2	2800	<24	280	840	16,5 ± 0,5	66,5 ± 0,5	55
	HQ-A3000H	7/5 A	1,2	3000	<24	300	900	16,5 ± 0,5	66,5 ± 0,5	56
	HQ-SC2000H	SC	1,2	2000	<8	200	600	22,5 ± 0,5	42,5 ± 0,5	54
	HQ-SC2200H	SC	1,2	2200	<8	220	660	22,5 ± 0,5	42,5 ± 0,5	55
	HQ-SC2500H	SC	1,2	2500	<8	250	750	22,5 ± 0,5	42,5 ± 0,5	56
	HQ-SC2700H	SC	1,2	2700	<8	270	810	22,5 ± 0,5	42,5 ± 0,5	58
	HQ-SC3000H	SC	1,2	3000	<9	300	900	22,5 ± 0,5	42,5 ± 0,5	60
	HQ-C3500H	C	1,2	3500	<10	350	1050	25,5 ± 0,5	49,5 ± 0,5	85
	HQ-C4000H	C	1,2	4000	<10	400	1200	25,5 ± 0,5	49,5 ± 0,5	81
	HQ-C4200H	C	1,2	4200	<10	420	1260	25,5 ± 0,5	49,5 ± 0,5	81
	HG-C4500H	C	1,2	4500	<10	450	1350	25,5 ± 0,5	49,5 ± 0,5	86
	HQ-D7000H	D	1,2	7000	<7	700	2100	32,5 ± 0,5	59,0 ± 0,5	170
	HQ-D8000H	D	1,2	8000	<7	800	2400	32,5 ± 0,5	59,0 ± 0,5	170
	HQ-F12000H	F	1,2	12000	<7	1200	3600	32,5 ± 0,5	90,0 ± 0,5	260
	HQ-F13000H	F	1,2	13000	<7	1300	3900	32,5 ± 0,5	90,0 ± 0,5	260

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know-how
trentennale, qualità
e affidabilità

*30 years
experience,
quality
and reliability*



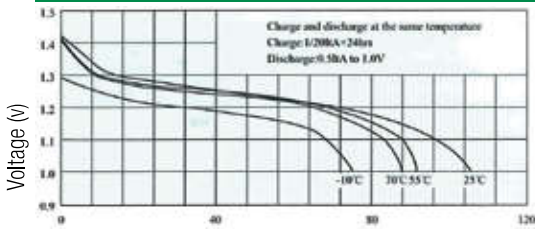
CARATTERISTICHE

MAIN CHARACTERISTICS

Tecnica di produzione all'avanguardia. La particolare tecnologia garantisce la massima efficienza di carica e lunga durata. Ampio range di temperature (-20 a +70°C). Elevata efficienza di carica anche ad alte temperature superiori a +55°C. Elevata performance in condizioni di temperature elevate.

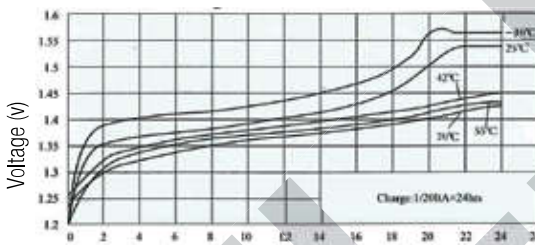
State-of-the-art welding technology. The special technology assures the maximum charging efficiency and a long life. Wide temperature range (- 20° to +70°C). High charging efficiency even at temperatures exceeding +55°C. Superior performance under high temperature conditions.

DISCHARGE CHARACTERISTICS



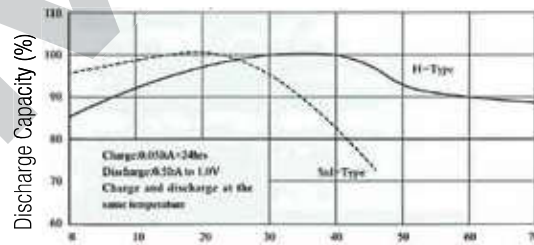
Discharge Capacity (%)
Discharging at 0,51tA at different temperatures

CHARGE CHARACTERISTICS



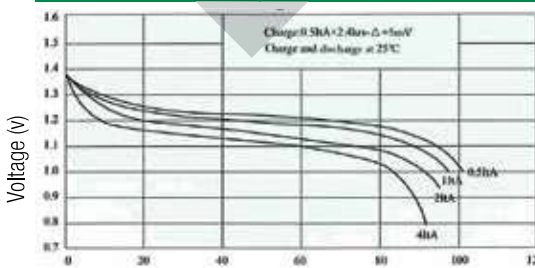
Charge Time (hrs)
Charging at 0,051tA at different temperatures

TEMPERATURE CHARACTERISTICS



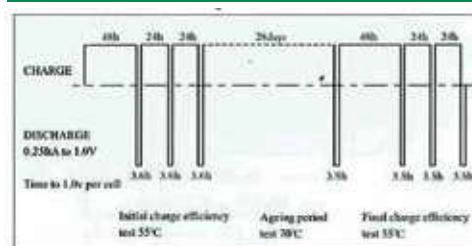
Ambient Temperature (°C)
Comparison of the standard Ni-MH with the high-temp Ni-MH battery at different temperatures

DISCHARGE CHARACTERISTICS



Discharge Capacity (%)
Discharging at different rate at 25°C

TESTING CHARACTERISTICS REFER TO ICEL 1001 STANDARD

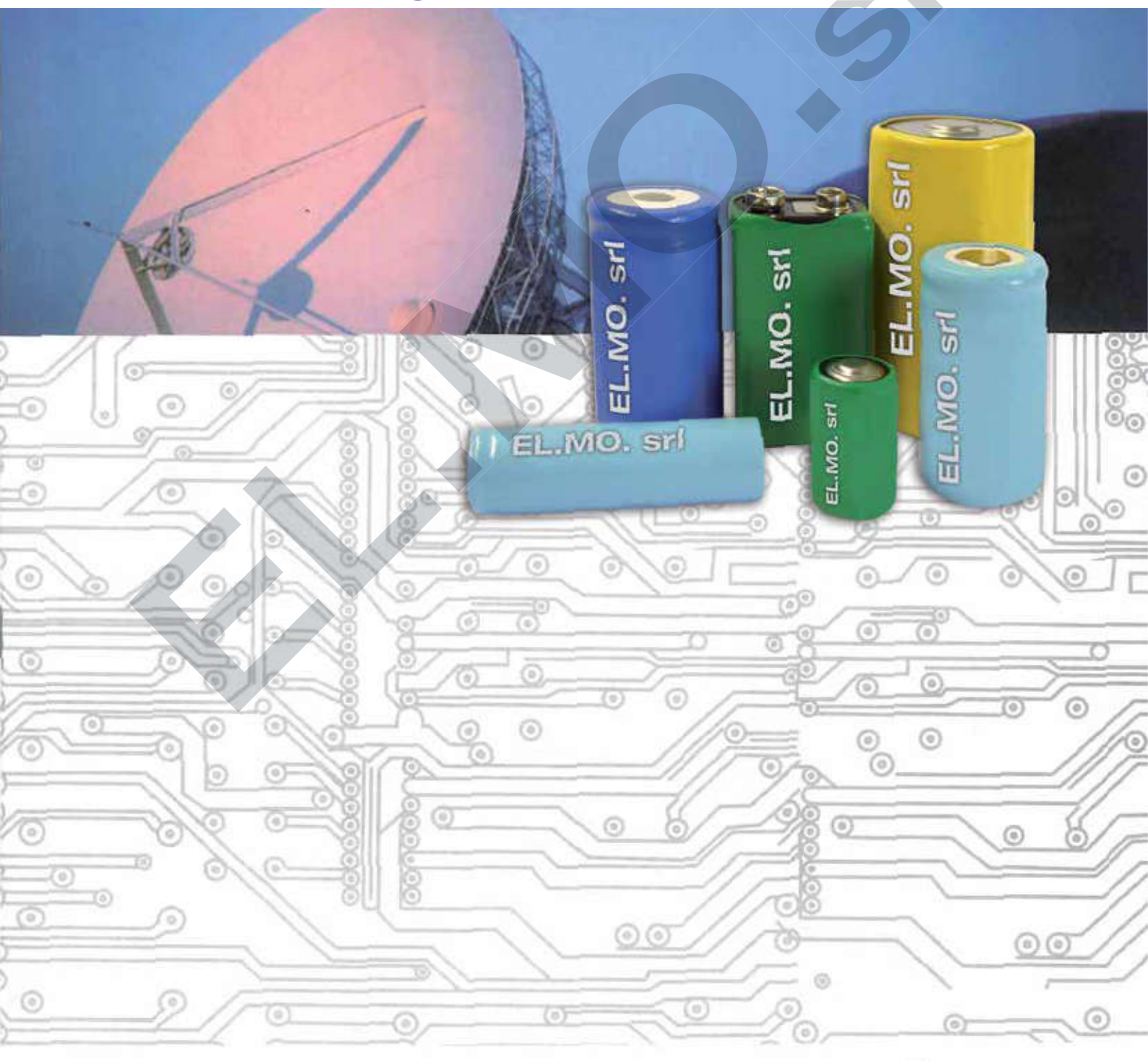


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MASSIMA EFFICIENZA
ECCELLENZA
INNOVAZIONE

MAXIMUM EFFICIENCY - EXCELLENCE - INNOVATION

Lithium Thionyl Chloride (Li-SOCl_2) Battery
Lithium Manganese Dioxide (Li-MnO_2) Battery



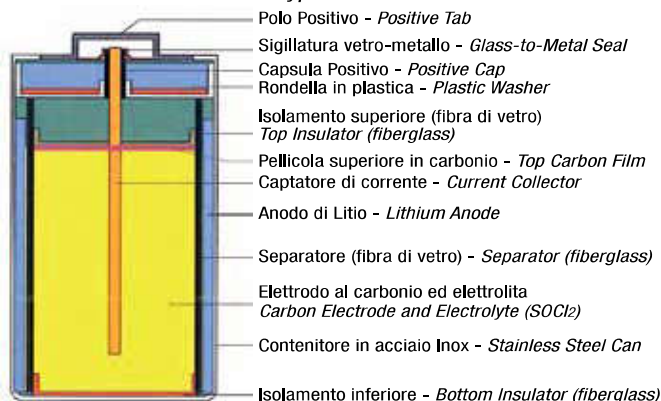
BATTERIE Li-SOCl₂

Modello Energy & High Power

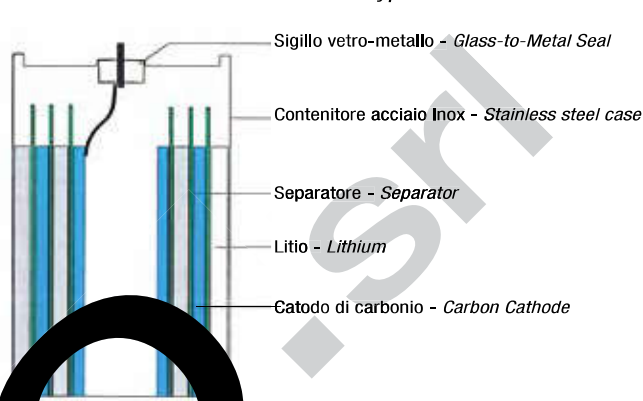
Li-SOCl₂ BATTERY - ENERGY & HIGH POWER TYPE

STRUTTURA DELLA BATTERIA - CELL CONSTRUCTIONS

Modello ENERGY - ENERGY Type



Modello HIGH POWER - HIGH POWER Type



CARATTERISTICHE PRINCIPALI - MAIN FEATURES

- Ampia gamma di temperature da -55°C a +85°C
Wide Temperature Range from -55°C to +85°C
- Maggiore durata di conservazione a magazzino ed elevata affidabilità: in dieci anni a temperatura ambiente il tasso di auto-scarica è inferiore all'1% annuo di potenza nominale.
Superior Shelf Life and Reliability: over 10 years at room temperature and self-discharge rate is less than 1% of its nominal capacity per year.
- Il modello Energy presenta una struttura a bobina che meglio si adatta alle scariche in bassa corrente. Può necessitare di

- *depassivazione prima del rilascio di corrente media. Energy type is bobbin structure and best suits for low current discharges. It may require depassivation before medium currents can be delivered.*
- Il modello High Power presenta una struttura a spirale che meglio si adatta a scariche a corrente elevata sia in corrente continua che ad impulsi.
High Power type is spiral structure and best suits for high current discharge for both continuous & pulse currents. It may require depassivation before medium currents can be delivered.

APPLICAZIONI - APPLICATIONS

Applicazioni Civili - Civil Application

Circuiti RAM CMOS / RAM and CMOS circuits
Apparecchiature per la ricerca di giacimenti petroliferi / Petroleum exploration devices
Apparecchiature medicali / Medical equipment
Allarmi anti-intrusione / Burglar alarms
Telefoni a scheda magnetica / Magnetic card phones
Sistemi di monitoraggio dei pneumatici / Tyre monitoring systems
Attrezzatura TPMS / TPMS equipment
Memorie elettroniche / Electronic memory devices
Apparecchiature per la visione notturna / Night vision devices

Applicazioni Militari e Aerospaziali - Military and aerospace application

Strumentazione di ricerca e salvataggio / Search and rescue equipment
Ricetrasmittenti GPS / GPS transceivers
Sistemi di posizionamento di emergenza / Emergency positioning systems
Disturbatori di sonar / Sonar Jammers
Velivoli senza pilota (UAV) / Unmanned Aerial Vehicles (UAVs)

Munizioni intelligenti / Smart ammunition

Sensori di terra / Ground sensors
Inneschi d'artiglieria / Artillery fuses
Settore marino/oceanografico / Marine/oceanographic applications

Strumentazione intelligente - Smart instruments

Misurazione dell'acqua / Water meters
Misurazione elettrica / Electricity meters
Contatori gas dotati di scheda intelligente IC / Smart IC card gas meters

Sistemi di sicurezza - Security systems

Allarmi / Alarms
Alloggiamenti riservati / Confidential cabinets
Sensori / Sensors
Apparecchiature di monitoraggio portatili a sensore / Portable sensor monitoring devices

MODELLO ENERGY (CILINDRICO)

ENERGY TYPE (CYLINDRICAL)

Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)		Diameter (mm)	Height (mm)	Approx Weight(g)
					Conts.	Pulse			
ER10250	---	3.6	400	0.5	5	10	10.2	25.7	3.8
ER10450	AAA	3.6	700	1.0	5	30	10.2	46.2	8.0
ER13150	---	3.6	450	0.5	10	30	13.0	15.0	6.0
ER13170	---	3.6	450	0.5	10	30	13.0	17.5	6.0
ER14250	1/2AA	3.6	1200	0.5	40	80	14.5	25.2	11.0
ER14335	2/3AA	3.6	1650	1.3	75	150	14.5	33.5	13.0
ER14505	AA	3.6	2400	2.0	100	200	14.5	50.5	22.0
ER17335	2/3A	3.6	2100	2.0	100	200	17.0	33.5	21.0
ER17505	A	3.6	3400	2.0	100	200	17.5	50.5	25.0
ER18505	---	3.6	4000	2.0	120	200	18.8	50.5	30.0
ER20505	---	3.6	4200	2.0	120	250	20.0	50.5	35.0
ER26500	C	3.6	9000	2.0	200	400	26.5	50.0	55.0
ER34615	D	3.6	19000	2.0	230	500	34.0	61.5	115.0
ER341245	DD	3.6	36000	2.0	450	1000	34.0	124.5	200.0
ER9V	---	10.8	1200	1.0	35	100	16.9 X 26.0 X 48.8		40.0

Energy Type (Button)

ER2450	---	3.6	500	0.5	4	10	24.5	5.0	10.0
ER34070	1/10D	3.6	1000	1.0	10	20	32.9	6.5	17.0
ER34100	1/6D	3.6	1700	1.0	15	20	32.9	10.0	22.0

COMPUTER BACK-UP

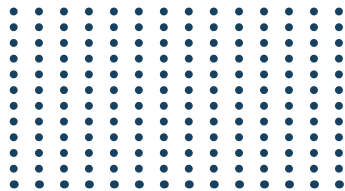
COMPUTER BACK-UP

Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)		Diameter (mm)	Height (mm)	Approx Weight(g)
					Conts.	Pulse			
ER14250-CB	1/2AA	3.6	1200	0.5	40	80	16.7	28.5	13.0
ER14505-CB	AA	3.6	2400	2.0	100	200	16.6	54.5	26.0
ER26500-CB	C	3.6	9000	2.0	200	400	30.0 X 30.0 X 56.0		66.0

MODELLO HIGH POWER

HIGH POWER TYPE

Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)		Diameter (mm)	Height (mm)	Approx Weight(g)
					Conts.	Pulse			
ER14250M	1/2AA	3.6	750	4.0	120	250	14.5	25.2	10.0
ER14335M	2/3AA	3.6	1200	4.0	300	500	14.5	33.5	13.0
ER14505M	AA	3.6	1800	10.0	500	1000	14.5	50.5	22.0
ER17335M	2/3A	3.6	1700	10.0	500	1000	17.5	33.5	21.0
ER18505M	---	3.6	3200	10.0	1000	2000	18.8	50.5	30.0
ER20505M	---	3.6	3600	10.0	1000	2000	20.0	50.5	35.0
ER26500M	C	3.6	6500	10.0	1000	2000	26.2	50.0	53.0
ER34615M	D	3.6	14000	10.0	2000	3000	34.0	61.5	118.0

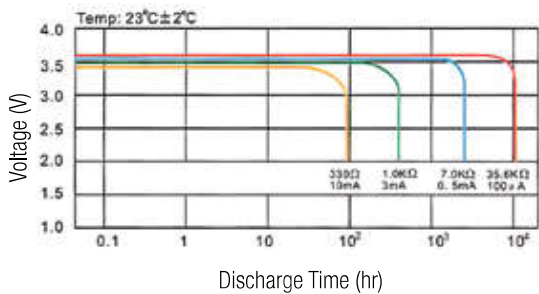


CURVA DI PERFORMANCE ELETTRICA

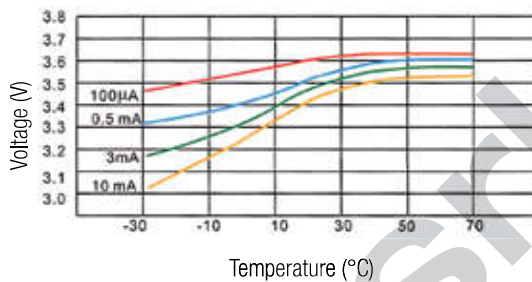
ELECTRICAL PERFORMANCE CURVE

Modello ENERGY (per ER14250 Tipo) - *ENERGY Type (for ER14250 Typical)*

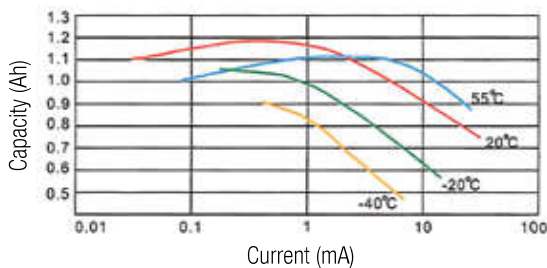
DISCHARGE CHARACTERISTICS



VOLTAGE VS. TEMPERATURE CHARACTERISTICS

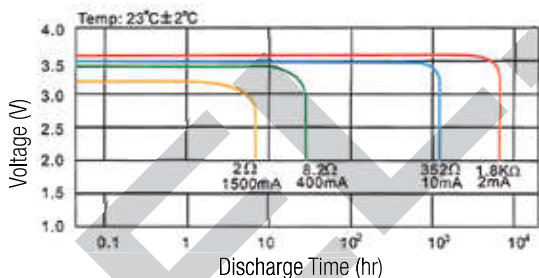


CAPACITY VS. CURRENT CHARACTERISTICS

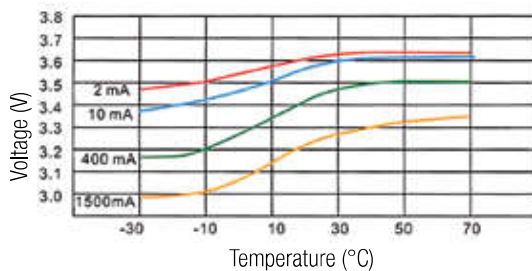


Modello HIGH POWER (per ER34615M Tipo) - *HIGH POWER Type (for ER34615M Typical)*

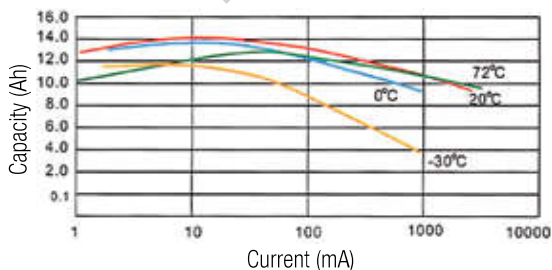
DISCHARGE CHARACTERISTICS



VOLTAGE VS. TEMPERATURE CHARACTERISTICS



CAPACITY VS. CURRENT CHARACTERISTICS





BATTERIE Li-SOCl₂

Modello Alta Temperatura

Li-SOCl₂ BATTERY - HIGH TEMPERATURE TYPE

Alta Temperatura

HIGH TEMPERATURE

Model	Size	Nominal Voltage (V)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)	Diameter (mm)	Height (mm)	Approx Weight(g)
ER14250S	1/2AA	3.6	500	50	50	14.5	25.0	10.0
ER14505S	AA	3.6	1600	100	100	14.5	50.5	19.0
ER26500S	C	3.6	4800	35	100	26.2	50.0	60.0
ER34615S	D	3.6	10500	35	200	34.0	61.5	110.0
ER341245S	DD	3.6	20000	200	1000	34.0	127.0	200.0

CARATTERISTICHE PRINCIPALI - MAIN FEATURES

Innalzamento della gamma di temperature oltre i 150°C
Extension of temperature range up to +150°C

Maggiore durata di conservazione a magazzino e grande affidabilità.
Superior shelf life and high reliability

APPLICAZIONI - APPLICATIONS

Strumentazione per rilevazione fisica e rilevazione di pozzi NC
Physical detection and NC wells detection equipment

Strumentazione di acquisizione dati
Data acquisition equipment

Strumentazione di collaudo elettronico
Electronic testing equipment

Strumentazione aerospaziale
Aerospace equipment

BATTERIE Li-SO₂

Li-SO₂ BATTERY

Specifiche di prodotto - Product specification

Model	Size	Nominal Voltage (V)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)		Diameter (mm)	Height (mm)	Approx Weight(g)
					Conts.	Pulse			
LSS14505	AA	2.9	1100	3	100	200	14.5	50.5	20
LSS18505	---	2.9	2000	40	1500	2500	18.8	50.5	28
LSS26500	C	2.9	3500	30	1000	2000	26.2	50.0	50
LSS34615	D	2.9	8000	50	2000	5000	34.2	61.5	90

CARATTERISTICHE PRINCIPALI - MAIN FEATURES

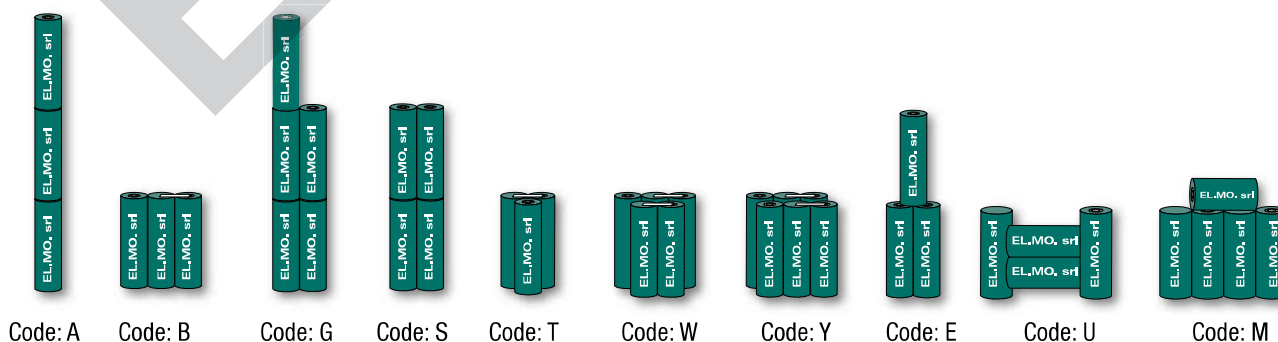
- Ampia gamma di temperature di funzionamento da -54°C a +71°C
Wide Operation Temperature Range from -54°C to +71°C
- Ridotta auto-scarica; inferiore al 3% di perdita di potenza per anno di stoccaggio a temperatura ambiente
Low Self-discharge: Less than 3% of capacity loss per year of storage at room temperature

APPLICAZIONI - APPLICATIONS

- Utilizzo soprattutto per strumentazione di misurazione elettronica
Mainly used for electronic measuring instruments
- Contatori e strumentazione a basse temperature
Low-temperature instruments and meters
- Ricerca di petrolio
Oil exploration
- Sonde passive
Passive probes
- Registratori di dati
Data loggers

BATTERY PACK

REMARK: CUSTOMIZED DESIGN AVAILABLE



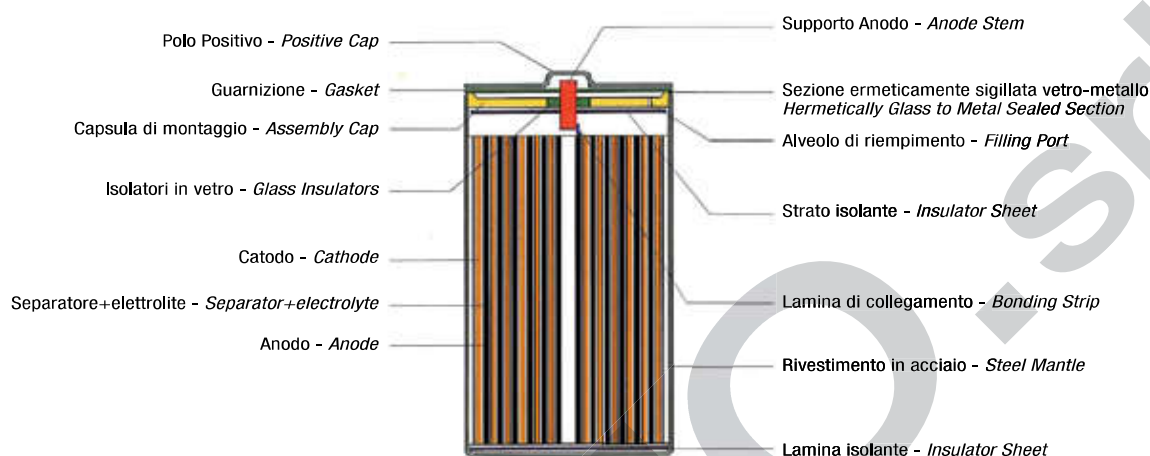
BATTERIE Li-MNO₂

BATTERIE CILINDRICHE

Li-MNO₂ BATTERY - CYLINDRICAL BATTERY

STRUTTURA DELLE BATTERIE (HIGH POWER) - CELL CONSTRUCTIONS (HIGH POWER TYPE)

HERMETICALLY GLASS TO METAL SEALED

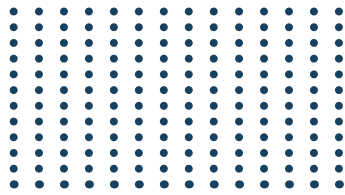


CARATTERISTICHE PRINCIPALI - MAIN FEATURES

- Alta tensione: 3.0 V per cella / *High Voltage: 3.0V per cell.*
- La struttura dell'elettrodo a spirale garantisce una scarica di corrente rapida
Spiral electrode structure ensures high-rate current discharge
- Bassa auto-scarica di corrente ed eccellente durata / *Low self-discharge rate and long life*
- Utilizzabile in un'ampia gamma di temperature: Sigillatura ermetica vetro-metallo: da -40°C a +85°C
Vi invitiamo a consultare EL.MO.srl in caso di utilizzo delle batterie a temperature inferiori a -20°C e superiori a +60°C
Wide operational temperature range: Hermetically glass to metal seal type: -40°C / +85°C - Consult EL.MO.srl when using batteries at temperatures beyond -20°C / +60°C.
- Caratteristiche di scarica stabili / *Stable discharge characteristics*
- Eccellente resistenza alle perdite / *Superior leakage resistance*

APPLICAZIONI - APPLICATIONS

- Apparecchi fotografici completamente automatici dotati di flash e esposimetro
Fully automated cameras with flash and exposure meter
- Sistemi DSC / *DSC*
- Illuminazione / *Lighting*
- Radio / *Radios*
- Chiavi elettroniche / *Electronic locks*
- Apparecchiature medicali / *Medical equipment*
- Contatori di elettricità, acqua e gas / *Water, gas and electricity meters*
- Alimentazione elettrica per backup di memoria / *Memory backup power sources*



High Power con struttura a spirale

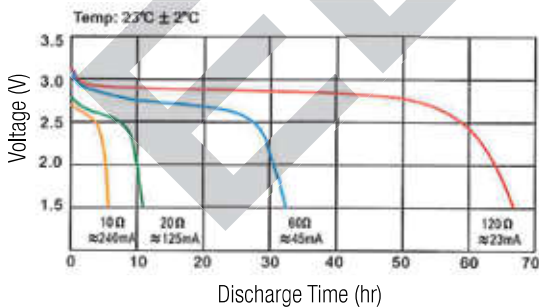
HIGH POWER SPIRAL STRUCTURE

Model	Size	Nominal Voltage (V)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)		Diameter (mm)	Height (mm)	Approx Weight(g)
					Conts.	Pulse			
CR14250SL	1/2AA	3.0	650	1.0	800	1500	14.5	25.0	10.0
CR14335SL	2/3AA	3.0	900	1.0	1000	2000	14.5	33.5	14.0
CR14505SL	AA	3.0	1500	1.0	2000	3000	14.5	50.5	21.0
CR2SL	-	3.0	800	5.0	1000	2000	15.5	27.0	13.0
CR123ASL	-	3.0	1500	1.0	1000	3000	17.0	33.5	20.0
CR17285SL	-	3.0	1000	10.0	800	1500	17.0	28.5	16.0
CR17335SL	2/3A	3.0	1500	1.0	1000	3000	17.0	33.5	20.0
CR17450SL	-	3.0	2200	1.0	1500	3500	17.0	45.0	26.0
CR17505SL	A	3.0	2500	10.0	1500	3500	17.0	50.5	30.0
CR18505SL	-	3.0	2800	1.0	2000	3000	18.5	50.5	35.0
CR20505SL	-	3.0	2800	10.0	2000	3000	20.0	50.0	35.0
CR26500SL	C	3.0	5000	10.0	2000	3000	26.0	50.5	62.0
CR26600SL	-	3.0	6000	10.0	1500	3000	26.0	60.0	78.0
CR34615SL	D	3.0	10000	10.0	2000	3000	34.0	61.5	125.0
2CR5SL	-	6.0	1500	1.0	1500	3500	34.0X17.0X45.0		43.0
CR-P2SL	-	6.0	1500	1.0	1500	3500	35.8X19.5X34.8		42.0

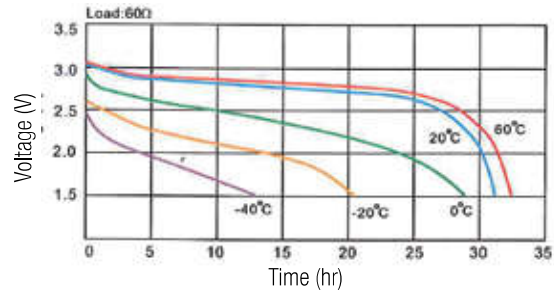
CARATTERISTICHE DI PERFORMANCE ELETTRICA (PER CR14505SL TIPO)

ELECTRICAL PERFORMANCE CHARACTERISTICS (FOR CR14505SL TYPE)

DISCHARGE CHARACTERISTICS



TEMPERATURE CHARACTERISTICS



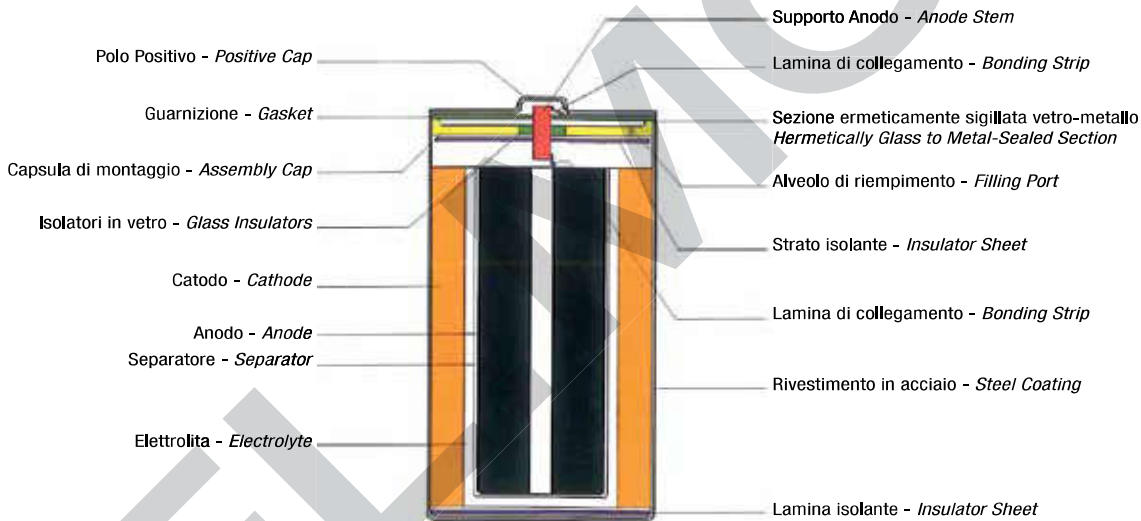
High Power con struttura a bobina

HIGH CAPACITY BOBBIN STRUCTURE

Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Discharge Current (mA)		Diameter (mm)	Height (mm)	Approx Weight(g)
					Conts.	Pulse			
CR10450BL	---	3.0	850	0.5	10	100	10.0	45.0	10.0
CR14250BL	1/2AA	3.0	900	0.5	7	70	14.5	25.0	11.0
CR14335BL	2/3AA	3.0	1100	0.5	8	80	14.5	33.5	16.0
CR14505BL	AA	3.0	1800	0.5	10	100	14.5	70.5	22.0
CR17335BL	2/3A	3.0	1800	1.0	10	100	17.0	33.5	22.0
CR17450BL	---	3.0	2400	1.0	15	150	17.0	45.0	28.0

STRUTTURA DELLE BATTERIE (MODELLO HIGH CAPACITY)

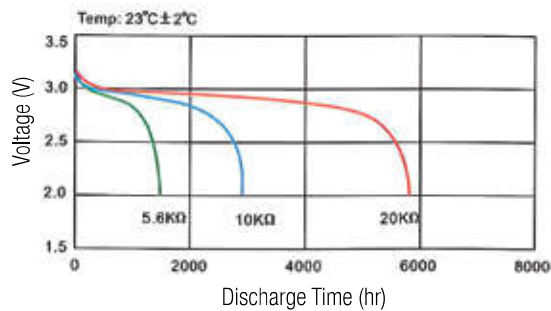
CELL CONSTRUCTIONS (HIGH CAPACITY TYPE)



CARATTERISTICHE DI PERFORMANCE ELETTRICA (PER CR14250BL TIPO)

ELECTRICAL PERFORMANCE CHARACTERISTICS (FOR CR14250BL TYPE)

DISCHARGE CHARACTERISTICS



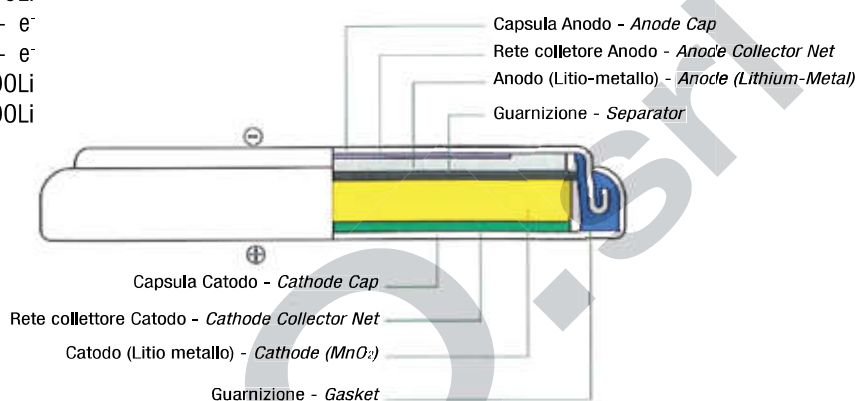
BATTERIE LI-MNO2

BATTERIE A BOTTONE

LI-MNO2 BUTTON BATTERY

STRUTTURA DELLA CELLA / CELL CONSTRUCTIONS

Reazione positiva:	$MnO_2 + Li^+ e^-$	$MnOOLi$
Positive Reaction:	$MnO_2 + Li^+ e^-$	$MnOOLi$
Reazione negativa:	Li	$Li^+ + e^-$
Negative Reaction:	Li	$Li^+ + e^-$
Reazione complessiva:	$MnO_2 + Li$	$MnOOLi$
Total Reaction:	$MnO_2 + Li$	$MnOOLi$

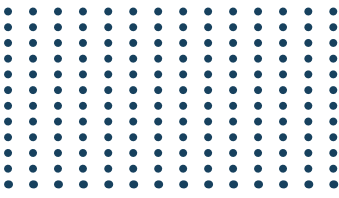


CARATTERISTICHE PRINCIPALI - MAIN FEATURES

- **Ridotta auto-scarica ed eccellente durata.**
Low self-discharge rate and long life.
- **Auto-scarica: inferiore al 2% annuo a temperatura ambiente.**
Self-discharge rate: less than 2% per year at room temperature.
- **Caratteristiche di scarica stabili**
Stable discharge characteristics.
- **Eccellenti caratteristiche di scarica ad impulsi rapidi**
Superior high-rate pulse discharge characteristics.
- **Utilizzabile in un'ampia gamma di temperature:** Range di temperature di utilizzo: da $-20^{\circ}C$ a $+60^{\circ}C$
Applicable in a wide temperature range. Operational temperature range: $-20^{\circ}C / +60^{\circ}C$ - Consult El.Mo S.r.l. when using batteries at temperature beyond $-20^{\circ}C / +60^{\circ}C$.
- **Eccellente resistenza alle perdite**
Superior leakage resistance.

APPLICAZIONI - APPLICATIONS

- **Orologi (digitali e analogici)**
Digital and analog Watches
- **Calcolatrici**
Calculators
- **Notebook elettronici**
Electronic Notebooks
- **Chiavi elettroniche per autoveicoli**
Electronic keys for automobiles
- **Radio a scheda**
Card radios
- **Schede per PC**
PC cards
- **Applicazioni LED-related**
LED-related applications
- **Apparecchiature medicali**
Medical equipment
- **Alimentazione elettrica per backup di memoria**
Memory backup power source



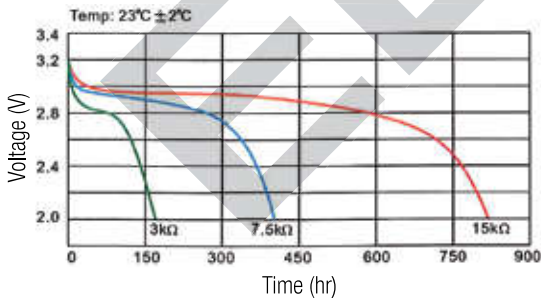
Specifiche di prodotto - Product specifications

Model	Nominal Voltage (v)	Nominal Capacity (mAh)	Standard Discharge Current (mA)	Diameter (mm)	Height (mm)	Approx Weight(g)
CR1025	3.0	30	0.1	10.0	2.5	0.6
CR1216	3.0	25	0.2	12.5	1.6	0.7
CR1220	3.0	40	0.2	12.5	2.0	0.8
CR1225	3.0	50	0.2	12.5	2.5	1.0
CR1616	3.0	50	0.2	16.0	1.6	1.2
CR1620	3.0	70	0.4	16.0	2.0	1.3
CR1632	3.0	120	0.4	16.0	3.2	1.6
CR2016	3.0	75	0.2	20.0	1.6	1.7
CR2025	3.0	150	0.4	20.0	2.5	2.4
CR2032	3.0	210	0.2	20.0	3.2	3.0
CR2330	3.0	260	0.4	23.0	3.0	4.0
CR2354	3.0	500	0.4	23.0	5.4	5.7
CR2430	3.0	270	0.4	24.5	3.0	4.3
CR2450	3.0	550	0.4	24.5	5.0	6.2
CR2477	3.0	850	0.2	24.5	7.7	8.4
CR2477T	3.0	1000	0.2	24.5	7.7	9.5
CR3032	3.0	500	0.4	30.0	3.2	6.8

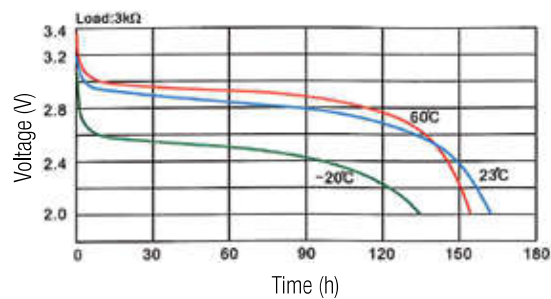
CURVA DI PERFORMANCE ELETTRICA ELECTRICAL PERFORMANCE CURVE

Per CR2025 Tipo - for CR2025 Type

DISCHARGE CHARACTERISTICS

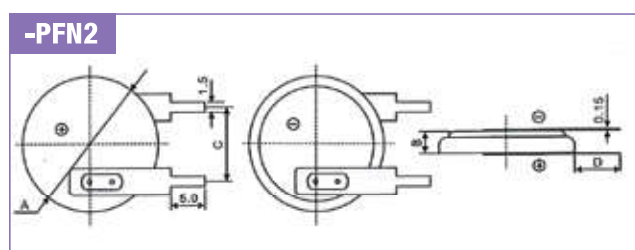
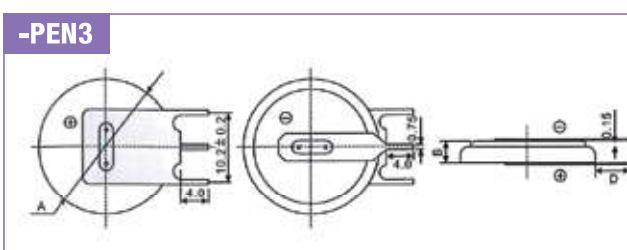
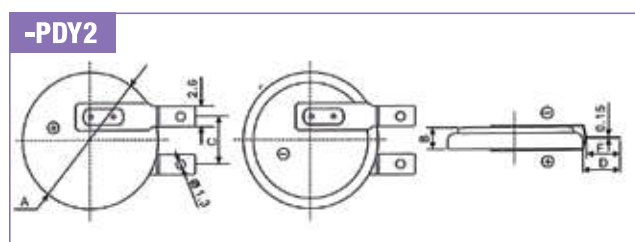
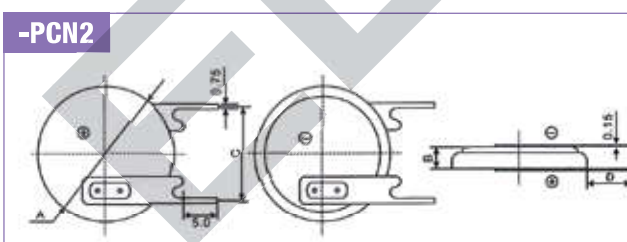
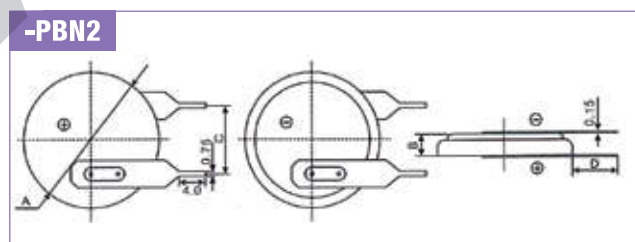
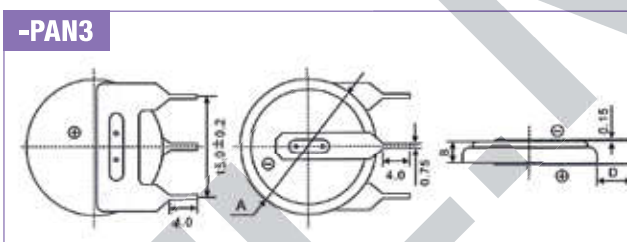
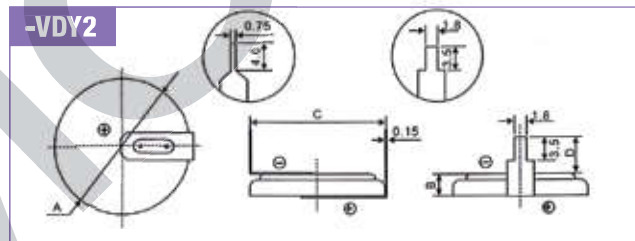
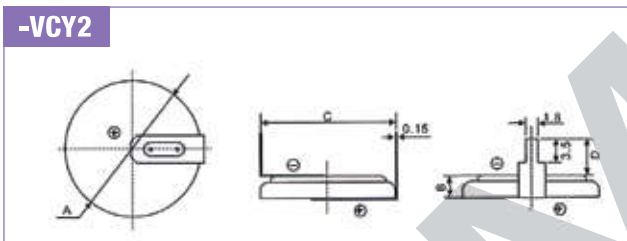
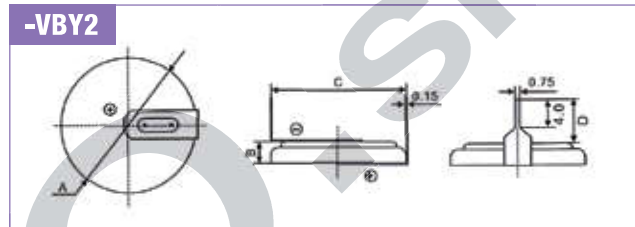
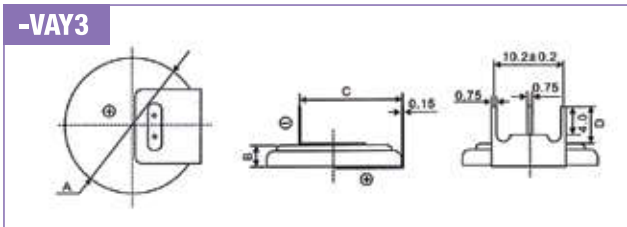


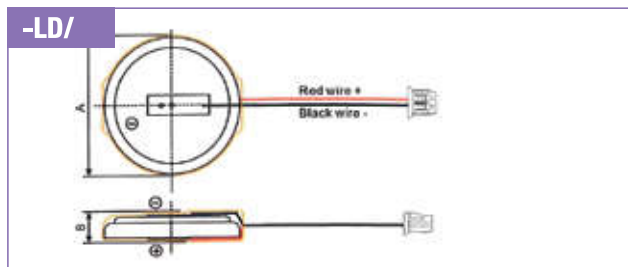
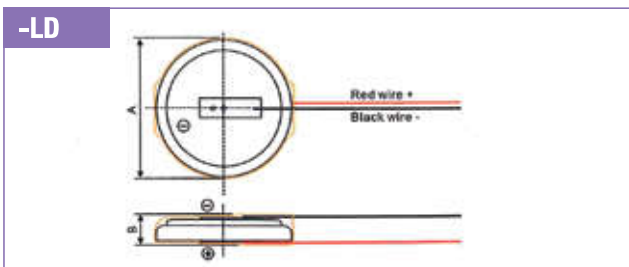
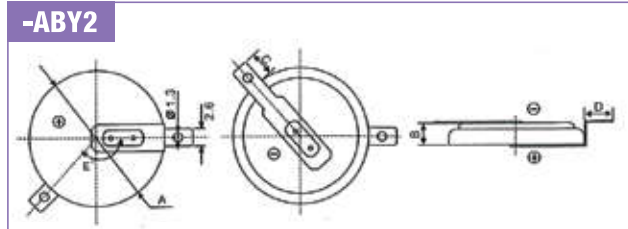
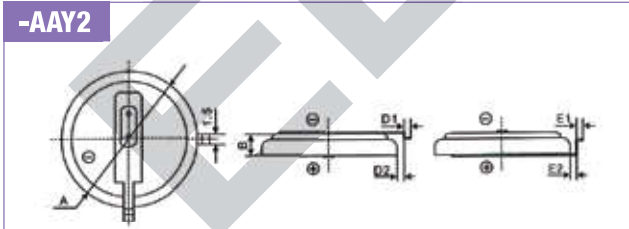
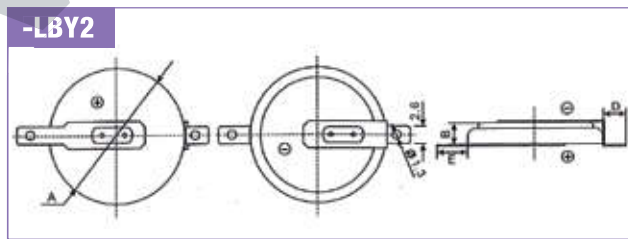
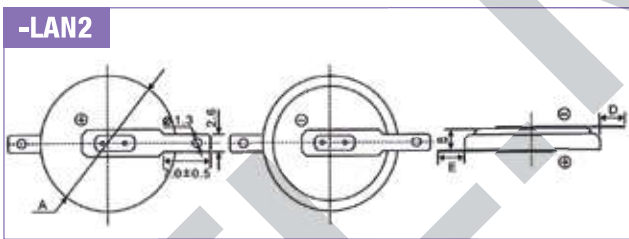
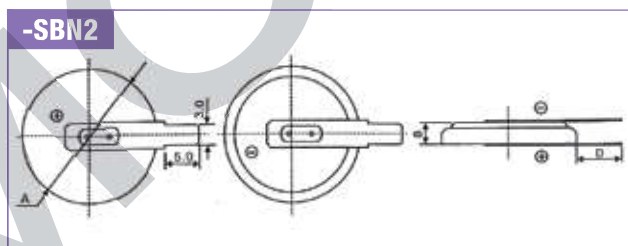
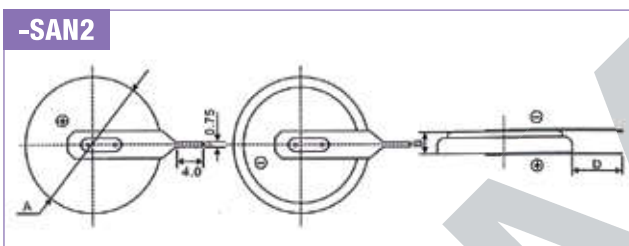
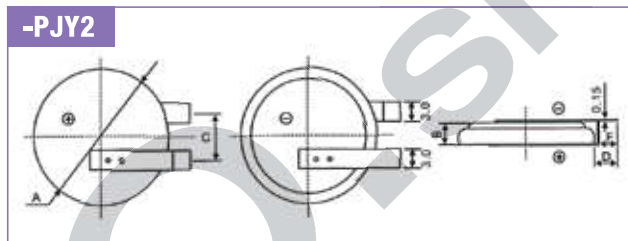
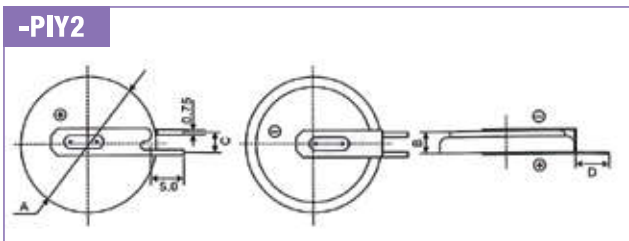
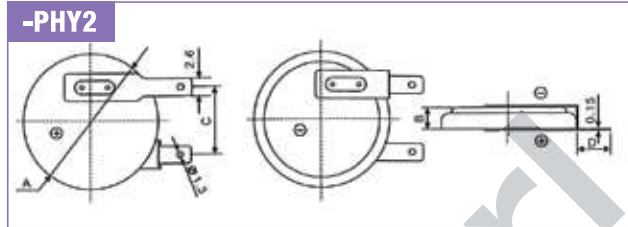
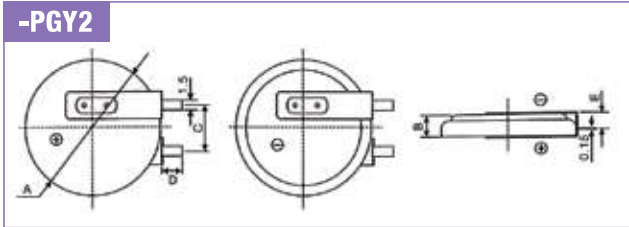
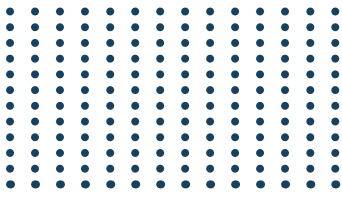
TEMPERATURE CHARACTERISTICS

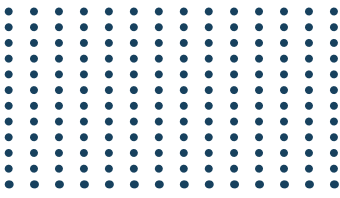


MORSETTI DISPONIBILI PER BATTERIE A BOTTONE

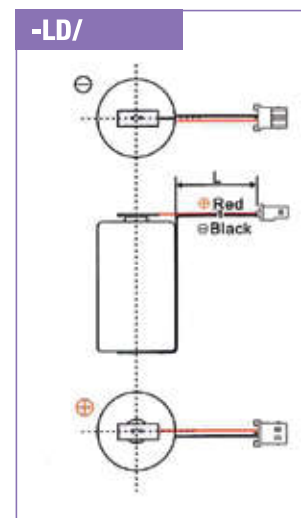
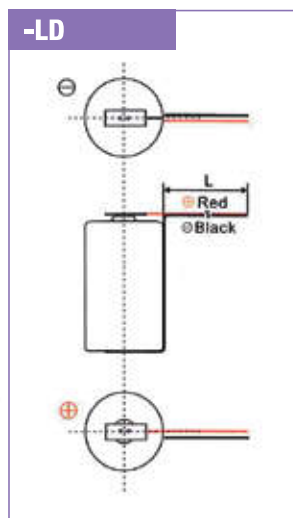
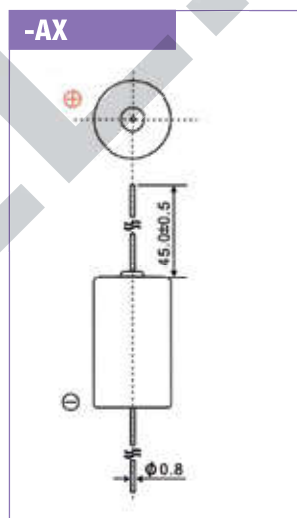
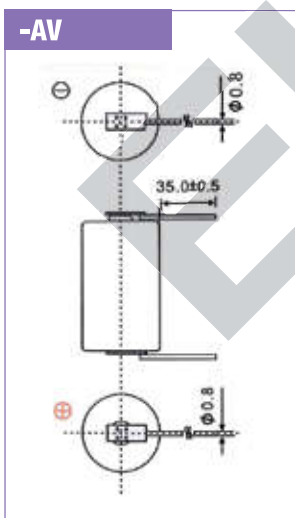
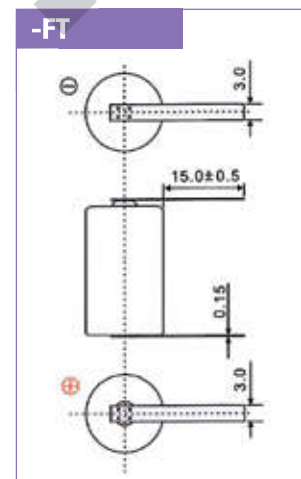
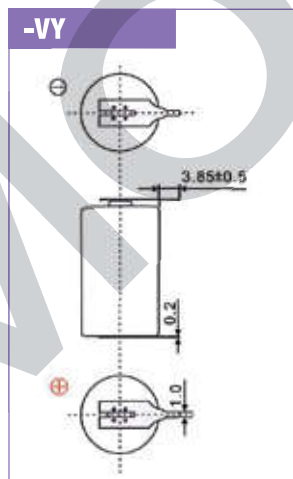
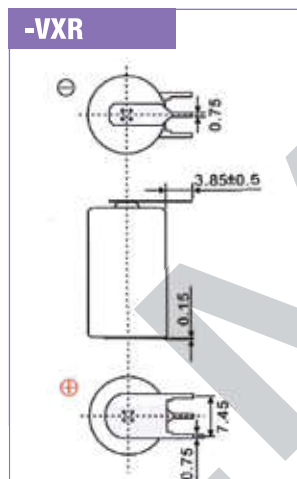
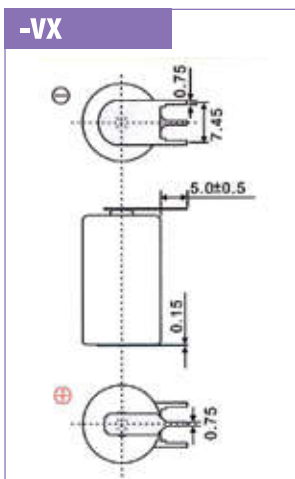
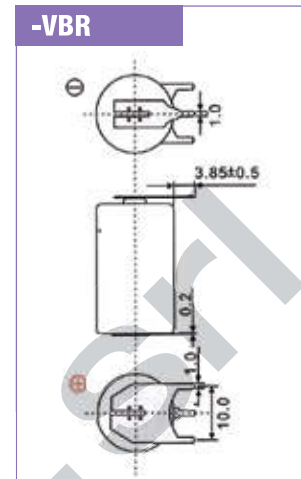
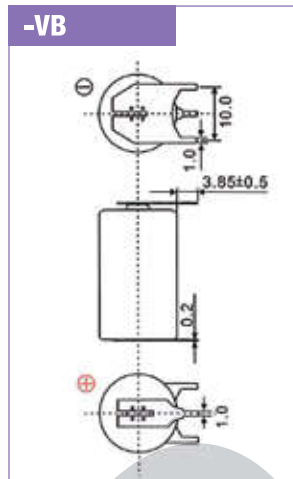
AVAILABLE TERMINALS FOR BUTTON BATTERY

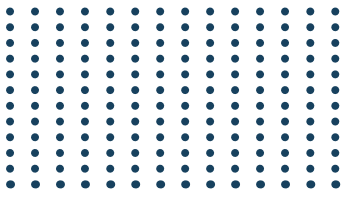




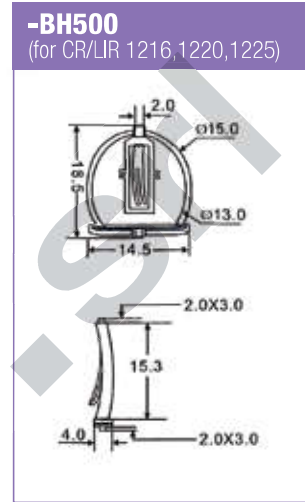
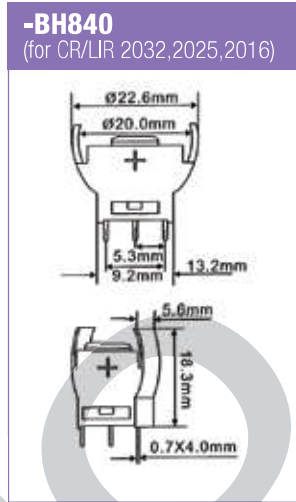
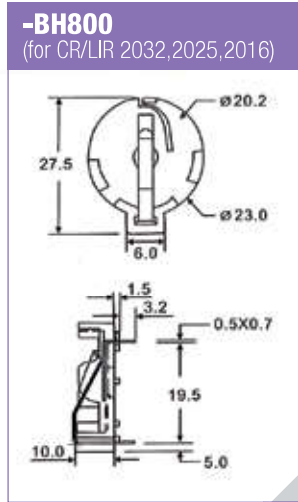
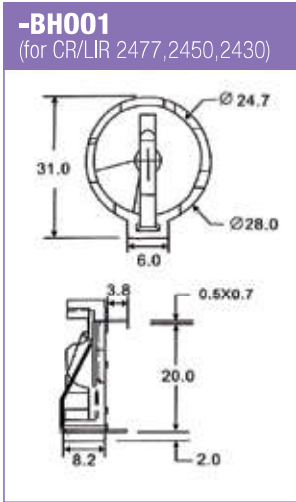


Nota: è disponibile una progettazione personalizzata
 Remark: Customized design is available

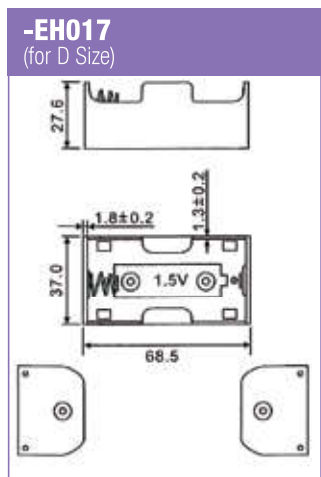
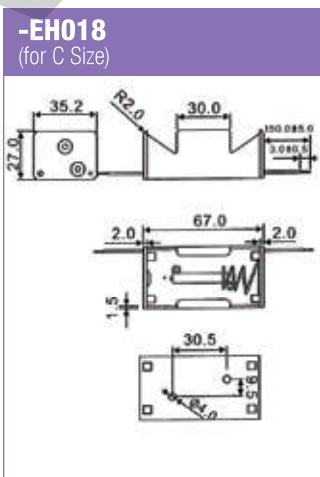
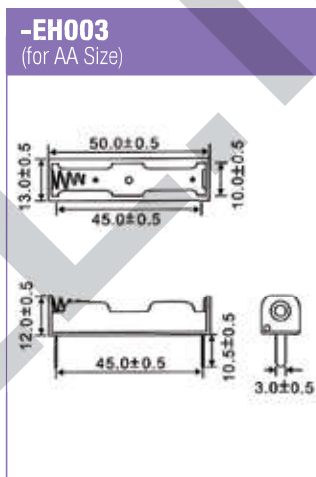
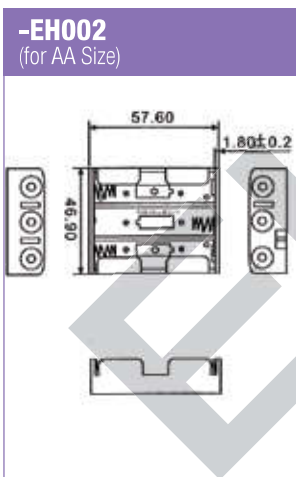




Per batterie a bottone - *For Button Batteries*




Per batterie cilindriche - *For Cylindrical Batteries*





POWER LI-ION BATTERIES

Type	Size	Nominal Capacity (mAh)	Nominal Voltage (v)	Dimension (mm)		Approx Weight (g)	Internal Resistance (mΩ)
				Outer size	Height		
IFR LiFePO ₄	18650PC	1200	3,2	18,2 ± 0,5	65 ± 0,5	42 ± 1	≤20
	22450PC	1200	3,2	22,2 ± 0,5	43 ± 0,5	42 ± 1	≤20
	26650PC	2400	3,2	26,2 ± 0,5	65 ± 0,5	80 ± 1	≤15
	32900PC	4500	3,2	32,2 ± 0,5	90 ± 0,5	168 ± 3	≤10
IMR LiMn ₂ O ₄	18650PC	1300	3,6	18,2 ± 0,5	65 ± 0,5	43 ± 1	≤20
	22430PC	1300	3,6	22,2 ± 0,5	43 ± 0,5	43 ± 1	≤20
	26650PC	2600	3,6	26,2 ± 0,5	65 ± 0,5	82 ± 1	≤15
	32900PC	5000	3,6	32,2 ± 0,5	90 ± 0,5	170 ± 3	≤10
ISR Tri-material	18650PC	1400	3,6	18,2 ± 0,5	65 ± 0,5	43 ± 1	≤20
	22430PC	1400	3,6	22,2 ± 0,5	43 ± 0,5	43 ± 1	≤20
	26650PC	2800	3,6	26,2 ± 0,5	65 ± 0,5	82 ± 1	≤15
	32900PC	5000	3,6	32,2 ± 0,5	90 ± 0,5	170 ± 3	≤10

LITHIUM-POLYMER BATTERIES

Type	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Dimension (mm)			Approx Weight (g)	Discharge Temp (°C)
					W	L	H		
	041430	3,7	120	≤80	14 ± 0,2	29 ± 1,0	38 ± 0,1	3,0 ± 0,5	-25-60
	053048	3,7	750	≤80	30 ± 0,2	48 ± 1,0	5,0 ± 0,2	15 ± 0,5	-25-60
	046880	3,7	2000	≤20	68 ± 1,0	80 ± 1,0	4,0 ± 0,2	50 ± 1	-25-60
	755060	3,7	2500	≤20	50 ± 0,5	60 ± 1,0	7,5 ± 0,2	55 ± 1	-25-60
	655085	3,7	3000	≤20	50 ± 0,5	85 ± 1,0	6,5 ± 0,2	65 ± 1	-25-60
	076595	3,7	4000	≤20	65 ± 1,0	95 ± 1,0	7,0 ± 0,2	90 ± 2	-25-60
	0682115	3,7	5000	≤15	82 ± 1,0	115 ± 2,0	6,0 ± 0,2	115 ± 2	-25-60
	0760165	3,7	5000	≤15	60 ± 1,0	165 ± 2,0	7,0 ± 0,2	120 ± 2	-25-60
	70100165	3,7	10000	≤10	100 ± 2,0	165 ± 2,0	7,0 ± 0,2	240 ± 3	-25-60
	08120165	3,7	15000	≤10	120 ± 2,0	165 ± 2,0	8,0 ± 0,2	350 ± 4	-25-60
	75150190	3,7	20000	≤10	150 ± 2,0	190 ± 2,0	7,5 ± 0,2	465 ± 5	-25-60

LI-ION BATTERIES

Type	Model	Size	Nominal Voltage (v)	Nominal Capacity (mAh)	Internal Resistance (mΩ)	Dimension (mm)			Approx Weight (g)
						W	L	H	
	Square	LH-053048S	3,6	550	<60	5,1	29,8	48	19
		LH-062248S	3,6	400	<60	6,1	21,8	48	19
		LH-063048S	3,6	700	<60	6,1	30,1	48	27
		LH-063067S	3,6	900	<60	6,1	29,8	67	37
		LH-083448S	3,6	900	<60	8,0	33,8	48	36
		LH-072248S	3,6	550	<60	7,7	22,8	48	23
		LH-103448S	3,6	1400	<60	10,2	33,7	48	45
		LH-103463S	3,6	1700	<60	10,2	33,7	63,5	57
	Cylindrical	LH-14500S	3,6	500	<60	φ 14,3		50,5	20
		LH-14500S	3,6	550	<60	φ 14,3		50,5	20
		LH-18650S	3,6	1800	<50	φ 18,3		64,9	43
		LH-18650S	3,6	2000	<50	φ 18,3		64,9	43
		LH-18650S	3,6	2200	<50	φ 18,3		64,9	43
		LH-18650S	3,6	2400	<50	φ 18,3		64,9	45
		LH-18650S	3,6	2600	<50	φ 18,3		64,9	46
		LH-421V20P	3,6	10000	<50	φ 42,0		120,0	368

BATTERIE LI-ION OF LiFe PO₄

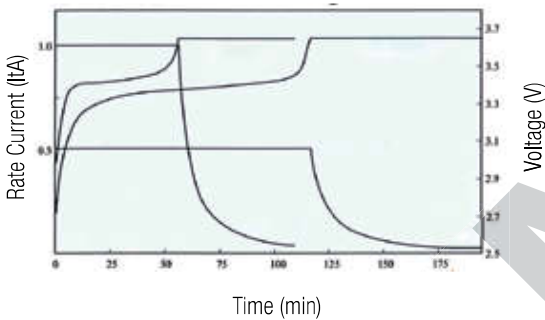
LI-ION OF LiFe PO₄ BATTERIES

Celle ricaricabili con tensione media superiore a 3,3V. Lunga durata, con efficienza all'80% è possibile arrivare a 1000 cicli; con scarica elevata può arrivare ad effettuare 500 cicli. Buona performance di scarica e carica ad elevata temperatura. Buona performance di sicurezza. Energia pulita, nessuna contaminazione metallica da Cadmio, Piombo, Mercurio, ecc.

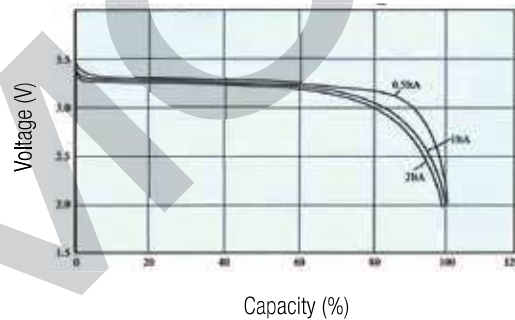
Rechargeable cells with average voltage above 3.3V. Long life, at 80% efficiency it's possible to achieve 1,000 cycles; at high discharge rate it can achieve 500 cycles. Good charge and discharge performance at high temperature. Good safety performance. Green power, no metal contaminants such as Cadmium, Lead, Mercury etc.



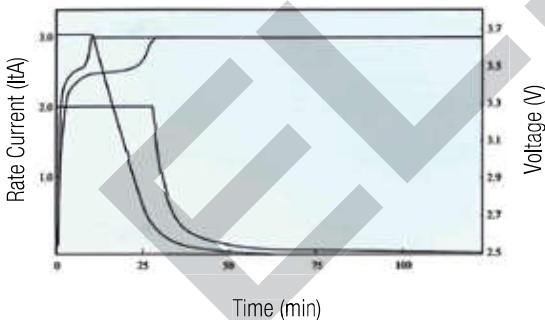
STANDARD CHARGE CURVES



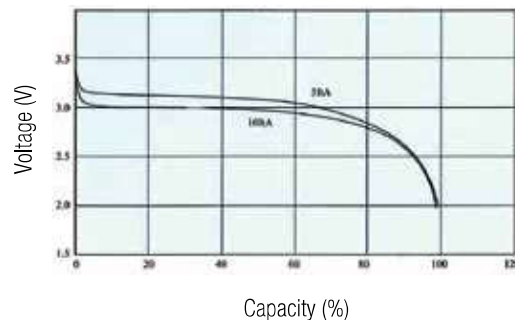
STANDARD DISCHARGE CURVES



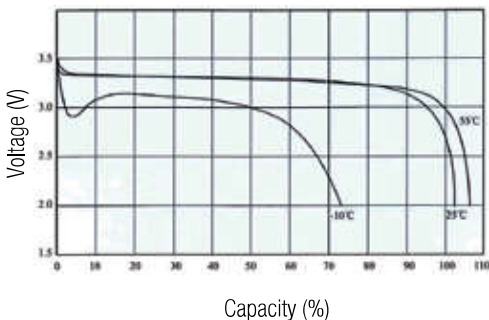
FAST CHARGE CURVES



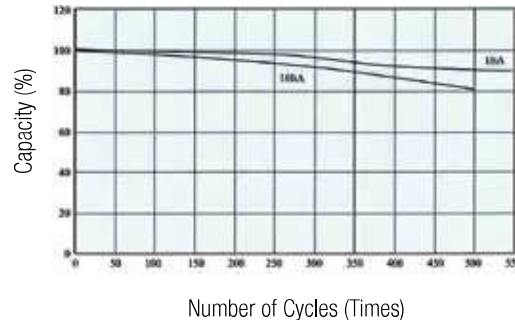
HIGH-RATE DISCHARGE CURVES

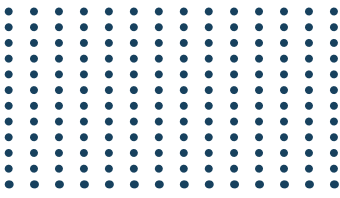


DISCHARGE CHARACTERISTICS AT DIFFERENT TEMPERATURES



CYCLE CHARACTERISTICS





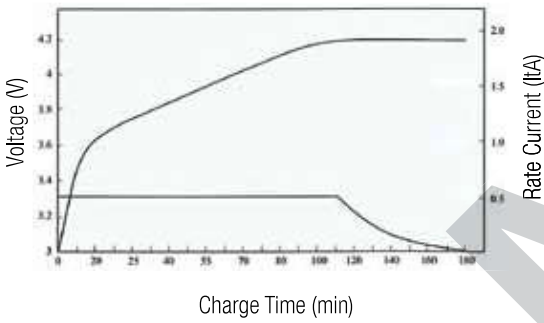
BATTERIE LITHIUM POLYMER

LITIUM POLYMER BATTERIES

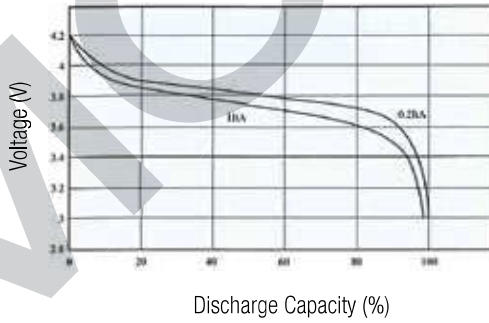
Elevata potenza energetica, grande maneggevolezza. Vastissima gamma di capacità per cella. Superiorità per performance di scarica e carica rapida. Energia pulita, nessuna contaminazione metallica da Cadmio, Piombo, Mercurio, ecc.

High energy power, great handiness. Wide range of cell capacity. Superior performance for fast charge and discharge. Green power, no metal contaminants such as Cadmium, Lead, Mercury etc.

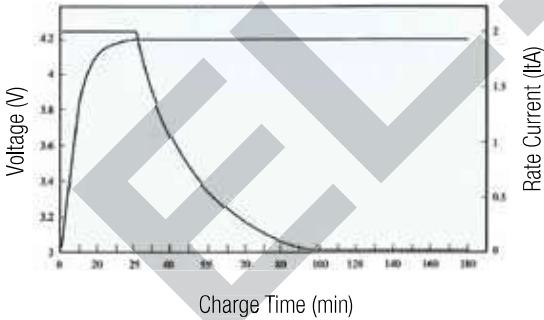
CHARGE CHARACTERISTICS



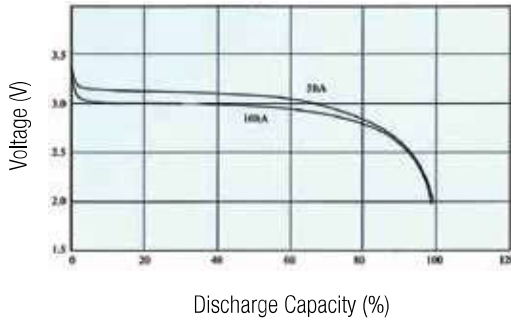
DISCHARGE CHARACTERISTICS



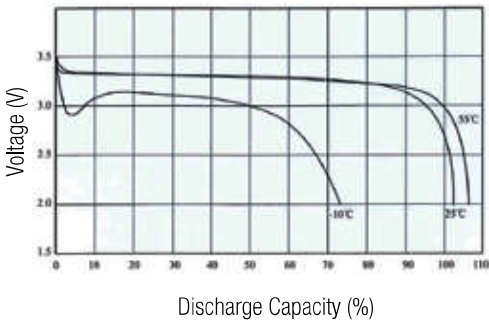
CHARGE CHARACTERISTICS



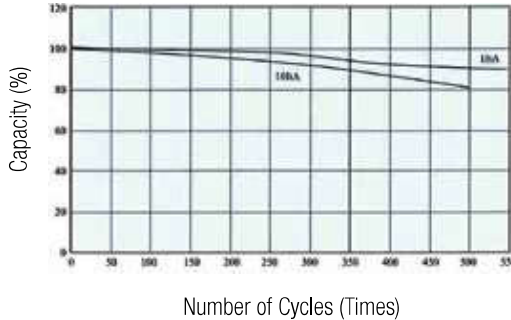
HIGH-RATE DISCHARGE CHARACTERISTICS



TEMPERATURE CHARACTERISTICS



CYCLE LIFE CHARACTERISTICS



BATTERIE LI-ION OF LiMn_2O_4

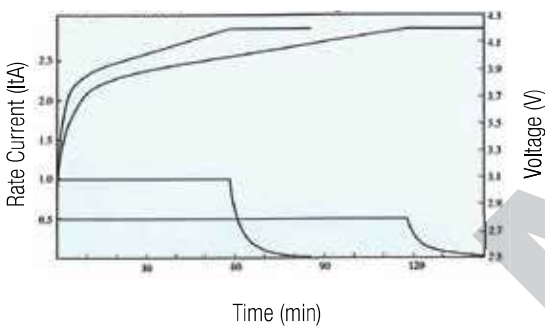
LI-ION BATTERIES OF LiMn_2O_4

Le celle utilizzano LiMn_2O_4 come composto per polo positivo. Hanno performance di scarica rapida che possono superare i 300 cicli. La massima corrente di scarica può raggiungere i 20C. Performance eccellente a bassa temperatura, può scaricare a corrente costante con temperatura di -30° . Buona performance di sicurezza e stabilità. Energia pulita, nessuna contaminazione metallica da Cadmio, Piombo, Mercurio, ecc.

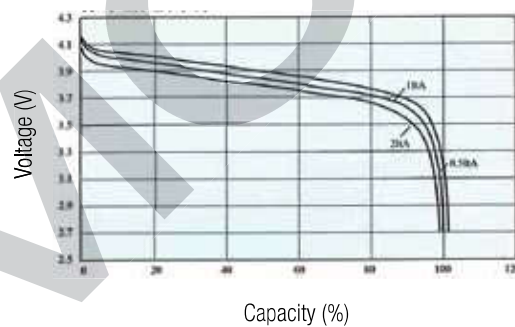
These cells adopt LiMn_2O_4 as positive polarity material and feature fast charge and discharge performance which can exceed 300 cycles. The max discharge rate can reach 20C. Excellent performance at low temperature, constant current discharge at a temperature of -30° . Good safety and performance. Green Power, no metal contaminants such as Cadmium, Lead, Mercury etc.



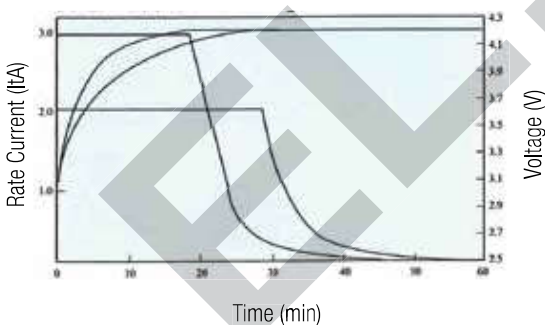
STANDARD CHARGE CURVES



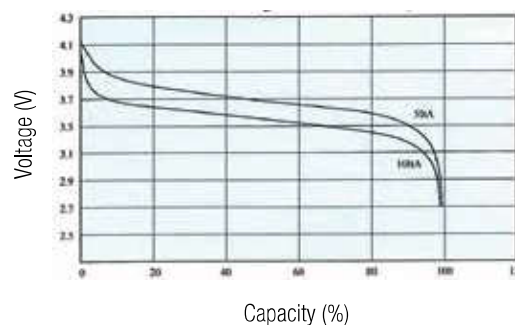
STANDARD DISCHARGE CURVES



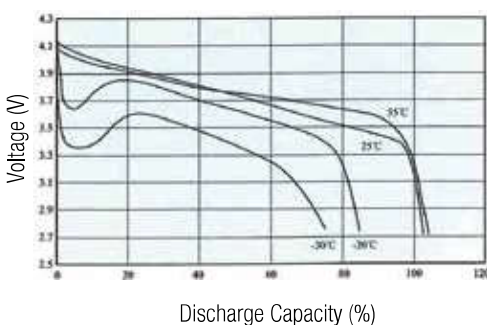
FAST CHARGE CURVES



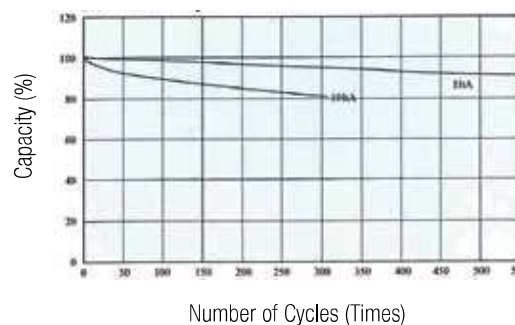
HIGH-RATE DISCHARGE CURVES



DISCHARGE CHARACTERISTICS AT DIFFERENT TEMPERATURES



CYCLE CHARACTERISTICS



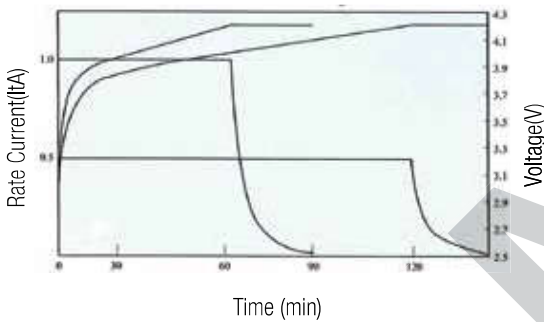
TRI-MATERIALE BATTERIE

TRI-MATERIALS BATTERIES

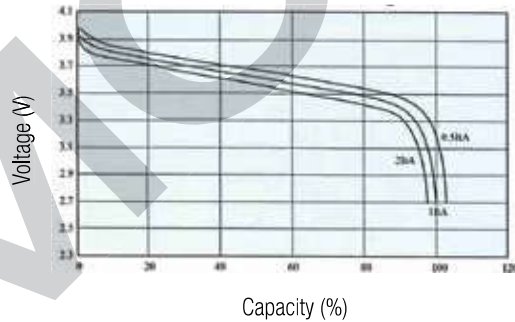
La cella è composta da un insieme di tre materiali (Ni, Co, Mn) per la polarità positiva. Performance di scarica rapida fino a 10C. Dopo 300 cicli può raggiungere l'80% della capacità iniziale. Può mantenere la performance sia ad alte che a basse temperature, ampia gamma di operatività tra -30°C~55°C. Energia pulita, nessuna contaminazione metallica da Cadmio, Piombo, Mercurio, ecc.

The cell adopts a compound of three materials (Ni, Co, Mn) as positive polarity material. Superior fast rate discharge performance up to 10C. After 300 cycles it can reach 80% of initial capacity. This cell maintains its performance both at low and high temperatures. Wide operating range between -30°C and +55°C. Green power, no metal contaminants such as Cadmium, Lead, Mercury etc.

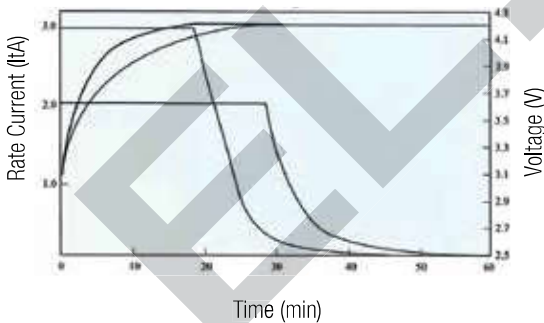
STANDARD CHARGE CURVES



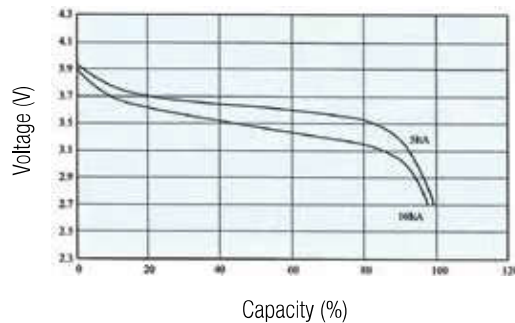
STANDARD DISCHARGE CURVES



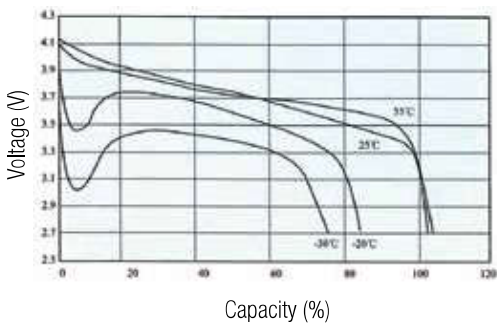
FAST CHARGE CURVES



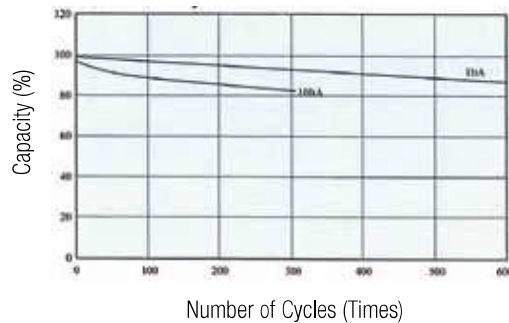
HIGH RATE DISCHARGE CURVES

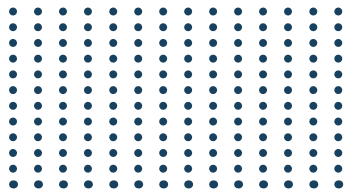


DISCHARGE CHARACTERISTICS AT DIFFERENT TEMPERATURES



CYCLE CHARACTERISTICS





BATTERIE PIOMBO Genesis

Genesis LEAD BATTERIES



RANGE SUMMARY



Publication No.: EN-NP-RS-002 - February 2005

BATTERIE PIOMBO Genesis

Genesis LEAD BATTERIES

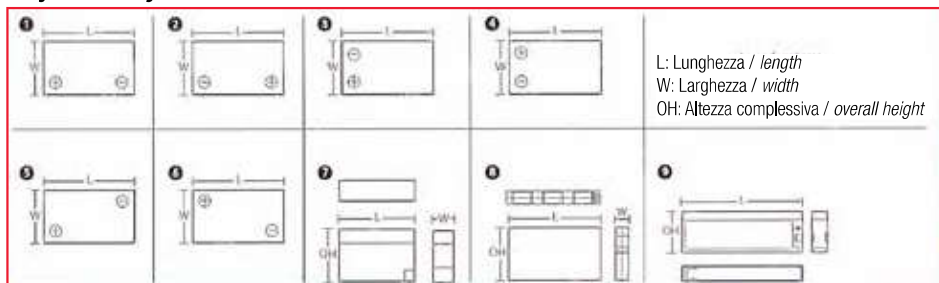
Type	FR Type	Volt	Nominale voltage @25°C (20h/Ah)	Lenght mm	Width mm	Hight (terminal included)	Weight Kg.	Layout	Terminal Type
	6NP1,2FR	6	1,2	97	25	56	0,30	1	A
6NP4		6	4	70	47	105	0,8	5	A
6NP7		6	7	151	33	100	1,28	5	A
6NP10		6	10	151	50	101	1,99	1	A
6NP12		6	12	151	50	101	2,04	1	C
12NP0,8		12	0,8	96	25	61	0,37	7	F/I
12NP1,2	12NP1,2FR	12	1,2	97	48	56	0,57	3	A
12NP2,3	12NP2,3FR	12	2,3	178	35	67	1,02	1	A
12NP2,9		12	2,9	79	56	105	1,24	1	A
12NP3,4		12	3,4	134	67	67	1,39	3	A
	12NP5FR	12	5	90	70	107	1,81	1	C
12NP7	12NP7FR	12	7	151	65	100	2,59	4	A/C
12NP10		12	9,5	151	65	118	3,28	4	A
12NP12	12NP12FR	12	12	151	98	100	4,06	4	C
12NP18		12	17,2	181	76	167	6,17	2	E
12NP24		12	24	166	175	125	9,07	2	E
12NP33	12NP33FR	12	33	197	131	158	11,79	1	E
	12NP38FR	12	38	197	165	172	14,59	2	G
12NP55		12	55	229	138	207	18,01	1	G
12NP65		12	65	350	166	174	23,63	2	G
12NP75		12	75	259	169	208	26,50	1	G
12NP100		12	100	329	174	214	32,94	1	G

BATTERIE PIOMBO Genesis

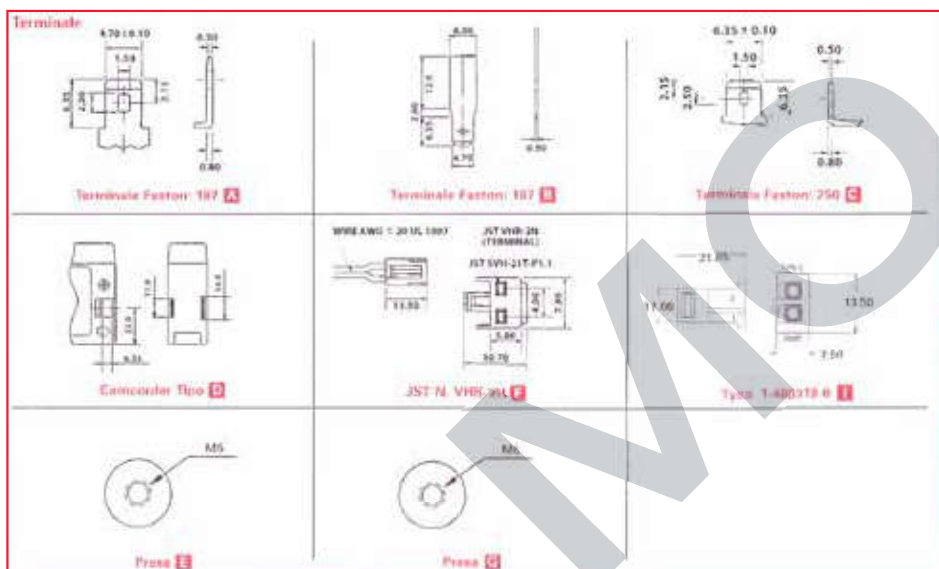
Genesis LEAD BATTERIES

Specifiche del prodotto
Product specifications

Layout / Layout



Terminale / Terminal



CARICA

- Carica di rinfresco: il prodotto tenuto in magazzino (temperatura ambiente 25°C richiede una carica di rinfresco ogni sei mesi. Applicare la tensione costante a 2,40Vpc, la corrente di carica iniziale dovrebbe essere fissata a meno di 0,1CA per un periodo compreso tra 15 e 20 ore.

SCARICA

- Interrompere la scarica quando si raggiunge la tensione minima ammissibile. Ricaricare immediatamente.
- Non scaricare con corrente continua 6CA.

CONSERVAZIONE

- Conservare sempre la batteria in condizione di piena carica.
- Se la batteria deve essere conservata per un periodo prolungato, applicare una carica di rinfresco ogni sei mesi.
- Conservare le batterie in un luogo fresco e asciutto.

TEMPERATURA

- Mantenere la temperatura ambiente compresa tra -15°C e 50°C sia per caricare che per scaricare.

INTEGRAZIONE DELLA BATTERIA NELLE APPARECCHIATURE

- Inserire la batteria in un alloggiamento ben ventilato.
- Evitare l'installazione della batteria vicino ad unità riscaldate come ad esempio un trasformatore.
- Posizionare la batteria nella parte bassa all'interno delle apparecchiature o rack per impedire un dannoso aumento della temperatura della batteria.

ALTRO

- Evitare di mettere i terminali in corto circuito.
- Non esporre a una fiamma aperta.
- Evitare di installare la batteria in ambienti nei quali possa entrare in contatto diretto con benzina, diluenti, solventi organici, resine sintetiche, olio, ecc..

CHARGING

- Top charge: Product in storage (ambient temperature 25°C/77°F) requires a top charge every six month. Apply constant voltage at 2.40Vpc, initial charging current should be set at less than 0.1CA for 15 to 20 hours.

DISCHARGE

- Stop discharging when voltage has reached the minimum permissible voltage. Recharge immediately.
- Do not discharge at 6CA.

STORAGE

- Always store batteries in a fully charged condition.
- If batteries are to be stored for a long period, apply a recovery top-charge every 6 months.
- Store batteries in a dry and cool location.

TEMPERATURE

- Keep at an ambient temperature of -15°C to 50°C for both charging and discharging.

INCORPORATING BATTERY INTO EQUIPMENT

- Encase battery in a well ventilated compartment.
- Avoid installing battery near heated units such as transformers.
- House battery in the lowest section of the equipment enclosure or rack to prevent improper battery temperature rise.

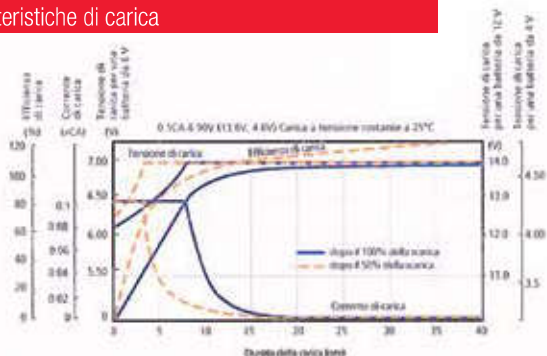
OTHERS

- Avoid short circuited terminals.
- DO NOT expose to open flame.
- Avoid house batteries in environments where they can come in direct contact with petrol, paint thinner, organic solvents, synthetic resins, oil, etc.

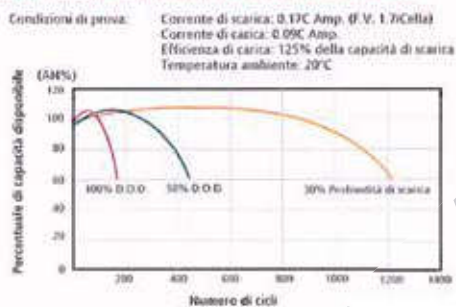
BATTERIE PIOMBO Genesis

Genesis LEAD BATTERIES

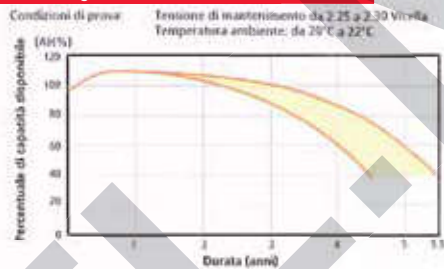
Caratteristiche di carica



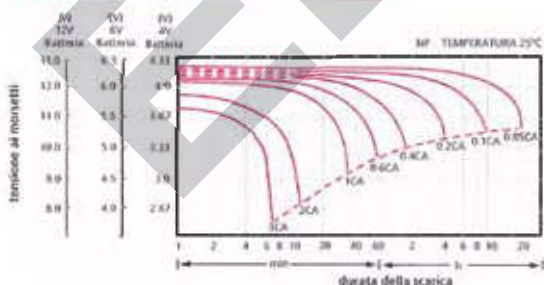
Numero di cicli in funzione della profondità di scarica della serie NP



Vita attesa in floating della serie NP



Curve caratteristiche di scarica a 25°C della serie NP



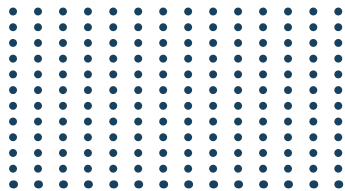
Se sono necessarie correnti di scarica superiori di 3C, consultate un tecnico EL.MO.srl prima di usarle

Tensione di carica

Temperatura °C	Use in standby* Tensione di mantenimento Volt per cella	Use ciclico** Volt per cella
0	2.340	2.510
10	2.310	2.490
20	2.280	2.450
25	2.265	2.435
30	2.250	2.420
35	2.235	2.405
40	2.220	2.390

* Corrente minima 5% C₂₀ no limite corrente max.

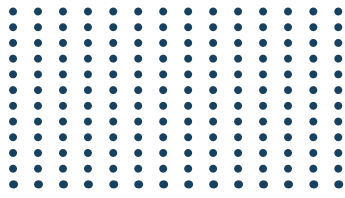
** Limite corrente max 25% C₂₀



BATTERIE RICARICABILI A BOTTONE

Ni-Mh Button Cells

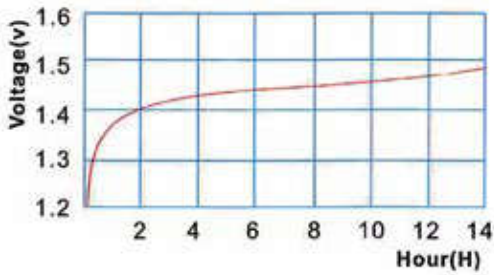
Models	Nominal Voltage (V)	Nominal Capacity (mAh)	Diameter (mm)	Height (mm)	Charge Current (mA)	Charge Time (H)	Trickle Charge Current (mA)	Weight (g)
B20H	1,2	20	$\phi 11,6 \pm 0,1$	$3,2 \pm 0,2$	2,0	14	0,6	1,3
B40H	1,2	40	$\phi 11,6 \pm 0,1$	$5,2 \pm 0,2$	4	14	1,5	1,8
B80H	1,2	80	$\phi 15,1 \pm 0,1$	$6,1 \pm 0,2$	8	14	3,0	3,5
B110H	1,2	110	$\phi 15,1 \pm 0,1$	$7,7 \pm 0,2$	11	14	4,0	4,4
B150H	1,2	160	$\phi 24,4 \times 14,0$	$5,4 \pm 0,2$	16	14	5,0	5,6
B250H	1,2	250	$\phi 25,0 \pm 0,1$	$6,3 \pm 0,2$	25	14	8,0	10
B300H	1,2	300	$\phi 25,0 \pm 0,1$	$7,2 \pm 0,2$	30	14	9,0	11,5
B330H	1,2	350	$\phi 25,0 \pm 0,1$	$8,4 \pm 0,2$	35	14	10	12,5



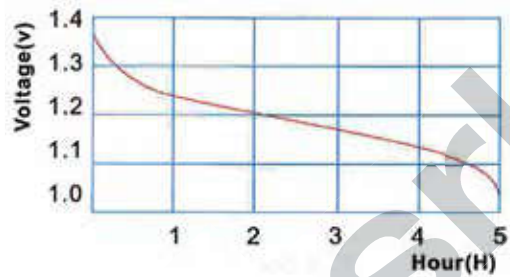
CARATTERISTICHE

CHARACTERISTICS

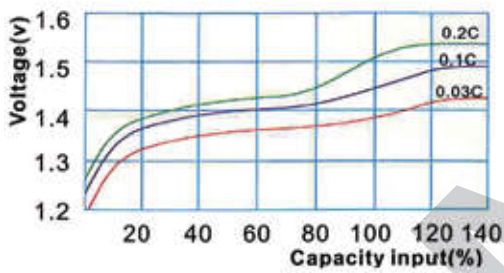
TYPICAL CHARGE CURVE AT 0,1 C



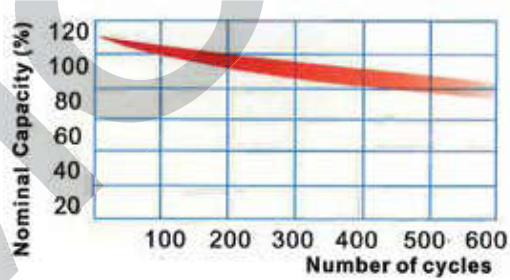
TYPICAL DISCHARGE CURVE AT 0,2 C



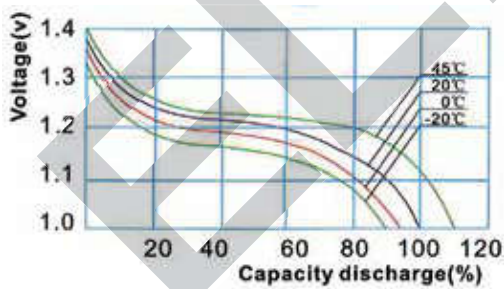
TYPICAL CHARGE CURVE AT VARIOUS RATES



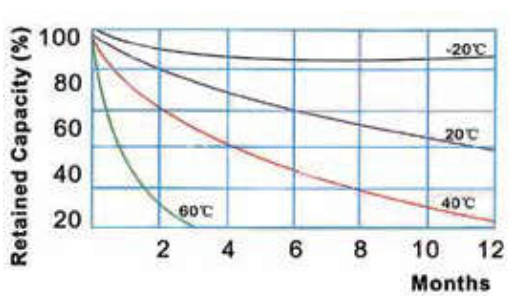
CYCLE LIFE CURVE



DISCHARGE CURVE AT DIFFERENT TEMPERATURES AT 0,2°C



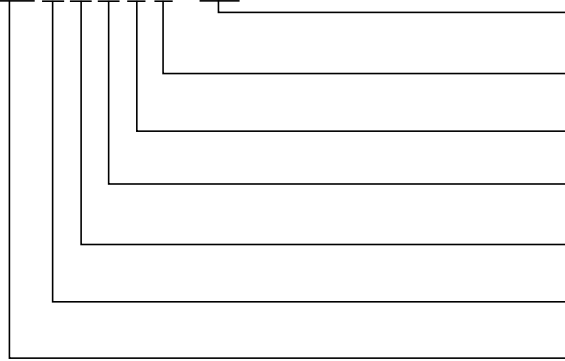
SELF DISCHARGE RATE AT DIFFERENT TEMPERATURES



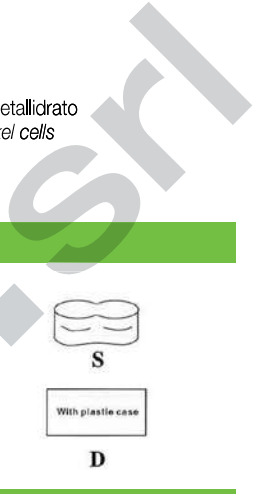
COMPOSIZIONE PACCHI BATTERIA

SYSTEM BATTERY PACKS

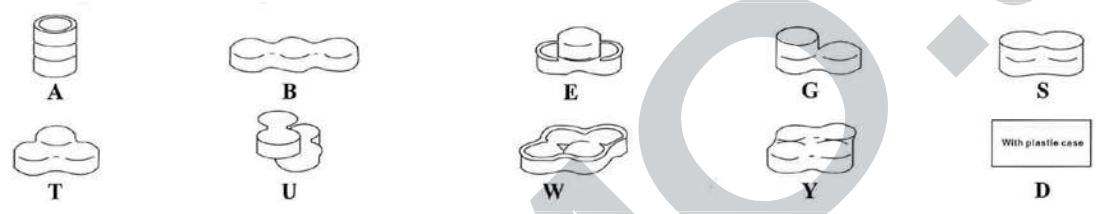
B60 K 3 A 2 H (JST)



- Tipi di connettore in uscita
Types of plugs of outlet plugs
- Direzione di uscita dei terminali batteria
Directions of outlet wires, welding pieces and plugs
- Tipi di terminazione in uscita dalla batteria
Shapes of adopted outlet wires, welding pieces and plugs
- Tipi di assemblaggio batteria
Shapes of combination cells
- Quantità di celle per pacco batteria
Number of combination cells
- "K" per celle nickel cadmio e "H" per celle nickel metallizzato
"K" for cadmium nickel cells and "H" for hydro-nickel cells
- Modello della singola cella
Type of single cell



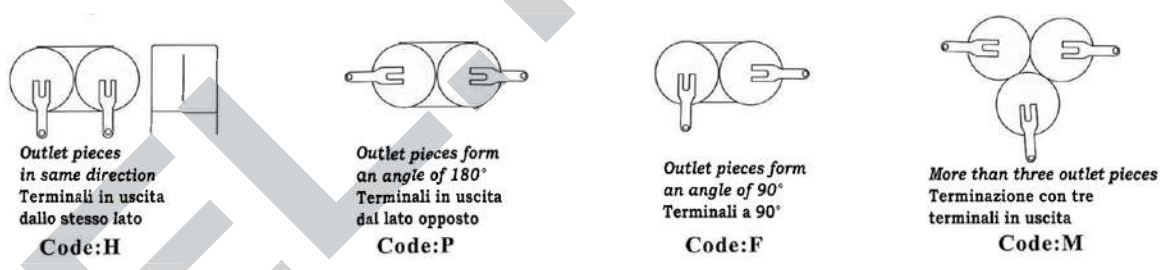
A. Descrizione tipi di assemblaggio batteria - Description of shapes



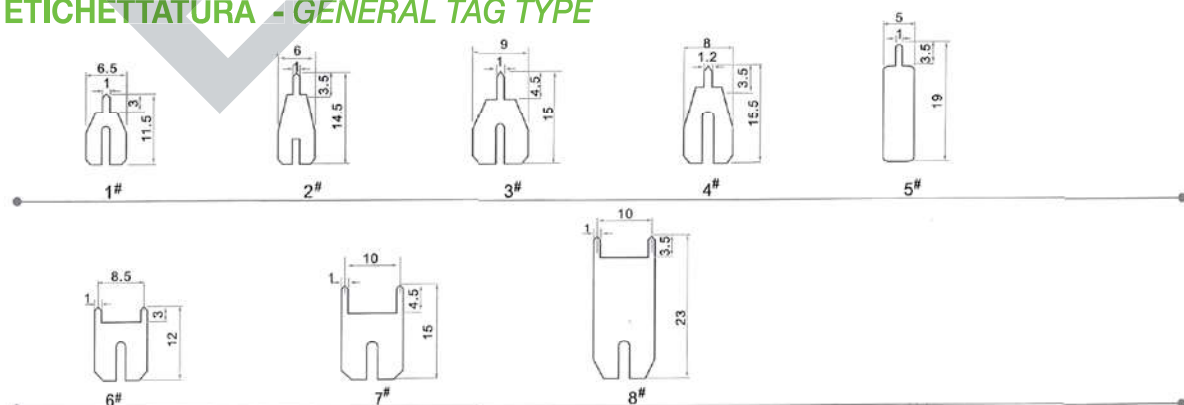
B. Descrizione direzioni di uscita dei terminali batteria - Description of outlet wires, welding pieces and plugs:



C. Descrizione tipi di terminazione in uscita dalla batteria - Description of direction of outlet wires, welding pieces and plugs:



ETICETTATURA - GENERAL TAG TYPE



NOTA: i pezzi saldati numerati da 1 a 8 (1#)-(8#) hanno uno spessore pari a 0,2 Mm in acciaio inossidabile nickel plated
 NOTE: Welded pieces numbered from 1 to 8 (1#)-(8#) are 0,2 mm stainless steel nickel-plating

CHARGERS

SWITCHMODE CHARGERS

Chargers

with exchangeable primary adapters (mpp 15 and GPP 18/36)

All products comply with to IEC 60335 and IEC 60601-1

APPLICATIONS

- medical applications
- electrical vehicles
- stair lifts
- patient lifts
- mobile lighting
- cleaning machines
- professional photographic technology
- starter batteries
- diving lamps

CHARACTERISTICS

- universal input 100-240 VAC
- constant voltage, limited current
- exchangeable primary adapters (MPP and GPP system)
- low leakage current
- low standby power
- LED charge indication
- continuous short circuit proof
- reverse polarity protection (not MPP 15 Li-Ion)
- 10KNTC, B = 3977 (GPP 18/36)
- characteristics: PP 8 = IUOU, MPP 15 = 101U GPP 18/36 = IUO

TECHNICAL DATA

input voltage: 100 to 240 V ($\pm 10\%$)

input current: PP 8 (0.13 - 0.2 A), MPP 15 (0.25 - 0.3 A), MPP 30 (0.4 - 0.5 A), GPP 18 (0.2-0.4 A) GPP 36 (0.18 - 0.45 A)

frequency: 50 to 60 Hz

efficiency: 75% at full load

EMC: complies with to EN 55011, EN 55022/B, FCC 47 part 15, EN 61000-3-3, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11

output current tolerance: $\pm 10\%$

ENVIRONMENTAL SPECIFICATION

operating temperature: 0 to 40°C at maximum load

storage temperature: -40°C to 70°C

humidity: 5% to 95% non condensing

input transient susceptibility: complies with IEC 61000 requirements

SAFETY SPECIFICATION

standards: fulfills class II SELV for the following applications: IEC 60601-1, IEC 60335-2-29, UL 1310, UL 2601-1, VDE, CE label

RELIABILITY SPECIFICATION

MTBF calculation: 200.000 hours at maximum load and an ambient temperature of 25°C (in accordance with MIL-HDBK-217)

MECHANICAL SPECIFICATION

weight: PP 9 Li-Ion (125 g), MPP 15 (140 g), mpp 30 (278 g), GPP 18 (200 g), GPP 36 (320 g)

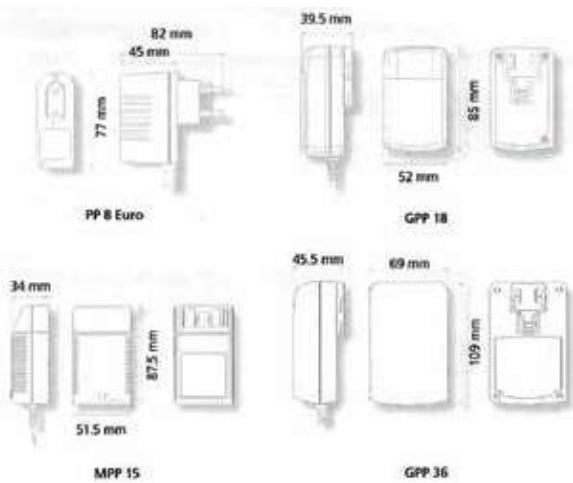
plug connector: AC input; (MPP/GPP) FRIVO exchangeable mains plug system, PP 8 (Euro, USA/Japan, UK), DC output: Universal output plug system

Li-Ion

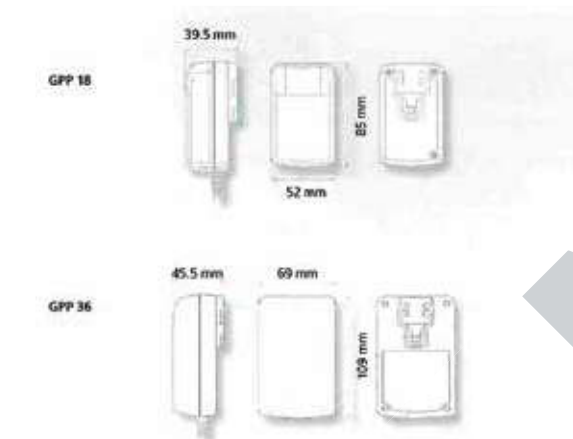


LiFePo₄





Output data					EURO	USA/Jap	UK
Voltage	Current	cells	Capacity	Housing	Order No.	Order No.	Order No.
4.1 V	1000 mA	1	0.8 - 10 Ah	PP 8	1890124	1891148	1891149
4.1 V	600 mA	1	0.8 - 10 Ah	PP 8	1828253	1891150	1891151
4.2 V	1000 mA	1	0.8 - 10 Ah	PP 8	1829906	1891161	1891162
4.2 V	600 mA	1	0.8 - 10 Ah	PP 8	1829804	1891159	1891160
					Worldwide		
8.4 V	800 mA	2	0.8 - 5 Ah	MPP 15	1826003		
12.6 V	800 mA	3	0.8 - 5 Ah	MPP 15	1826004		
16.8 V	800 mA	4	0.8 - 5 Ah	MPP 15	1826006		
with NTC							
18.4 V	800 mA	2	0.8 - 5 Ah	MPP 15	1826458		
12.6 V	800 mA	3	0.8 - 5 Ah	MPP 15	1826459		
16.8 V	800 mA	4	0.8 - 5 Ah	MPP 15	1826460		
4.2 V	3000 mA*	1	20 Ah	GPP 18	1832657		
8.4 V	1500 mA*	2	20 Ah	GPP 18	1832658		
4.2 V	4000 mA**	1	1.0 - 20 Ah	GPP 36	1834050		
8.4 V	3500 mA**	2	1.0 - 20 Ah	GPP 36	1834051		
12.6 V	2500 mA**	3	1.0 - 20 Ah	GPP 36	1834052		
16.8 V	2000 mA**	4	1.0 - 20 Ah	GPP 36	1834053		
21.0 V	1600 mA**	5	1.0 - 20 Ah	GPP 36	1834054		



Output data					Worldwide
Voltage	Current	No. of cells	Capacity	Housing	Order No.
3.6 V	3000 mA*	1	20 Ah	GPP 18	1832654
7.2 V	1500 mA*	2	20 Ah	GPP 18	1832655
3.6 V	4000 mA**	1	20 Ah	GPP 36	1834055
7.2 V	3500 mA**	2	20 Ah	GPP 36	1834056
10.8 V	2500 mA**	3	20 Ah	GPP 36	1834057
14.4 V	2000 mA**	4	20 Ah	GPP 36	1834058
18.0 V	1600 mA**	5	20 Ah	GPP 36	1834059

* without NTC 1.5 A
 ** without NTC 1.6 A

Product	FW Type	Approvals
PP 8 Li-Ion	FW 7574	CE, GS, SP _{US}
MPP 15 Li-Ion	FW 7219	CE, GS, cRU _{US}
GPP 18 Li-Ion	FW 7290	CE, GS, SP _{US}
GPP 36 Li-Ion	FW 7300	CE, GS, SP _{US}
GPP 18 LiFePO ₄	FW 7290	CE, GS, SP _{US}
GPP 36 LiFePO ₄	FW 7300	CE, GS, SP _{US}

Charge voltage can be adjusted for specific cell packs.
 Please observe accu specification.

CHARGERS

SWITCHMODE CHARGERS

Chargers

with exchangeable primary adapters (mpp 15/30 and GPP 18/36)

All products complies with to IEC 60335 and IEC 60601-1

APPLICATIONS

- medical applications
- electrical vehicles
- stair lifts
- patient lifts
- mobile lighting
- cleaning machines
- professional photographic technology
- starter batteries
- diving lamps

CHARACTERISTICS

- universal input 100-240 VAC
- constant voltage, current limited
- exchangeable primary adapters (MPP and GPP system)
- low leakage current
- low standby power
- LED charge indication
- continuous short circuit proof
- reverse polarity protection (not PP 8 Pb)
- 10KNTC, B = 3977
- characteristics: Pb * = IUOU

TECHNICAL DATA

input voltage: 100 to 240 V ($\pm 10\%$)

input current: PP 8 (0.13 - 0.2 A), MPP 15 (0.25 - 0.3 A), MPP 30 (0.4 - 0.5 A), GPP 18 (0.2 - 0.4 A) GPP 36 (0.18 - 0.45 A)

frequency: 50 to 60 Hz

efficiency: 75% at full load

EMC: complies with to EN 5501, EN 55022/B, FCC 47 part 15, EN 61000-3-2, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11

output current tolerance: $\pm 10\%$

ENVIRONMENTAL SPECIFICATION

operating temperature: 0 to 40°C at maximum load

storage temperature: -40°C to 70°C

humidity: 5% to 95% non condensing

input transient susceptibility: complies with IEC 61000 requirements

SAFETY SPECIFICATION

standards: fulfills class II SELV for the following applications: IEC 60601-1 (NiCd/NiMH only MPP 15), IEC 60335-2-29, UL 1310, UL 2601-1 (only Li-Ion), VDE, CE label, CSA

RELIABILITY SPECIFICATION

MTBF calculation: 200.000 hours resp. 100.000 hours (NiCd/NiMH) at maximum load and an ambient temperature of 25°C (in accordance with MIL-HDBK-217)

MECHANICAL SPECIFICATION

weight approx: PP 8 Li-Ion (125 g), MPP 15 (140 g), MPP 30 (278 g), GPP 18 (200 g), GPP 36 (320 g)

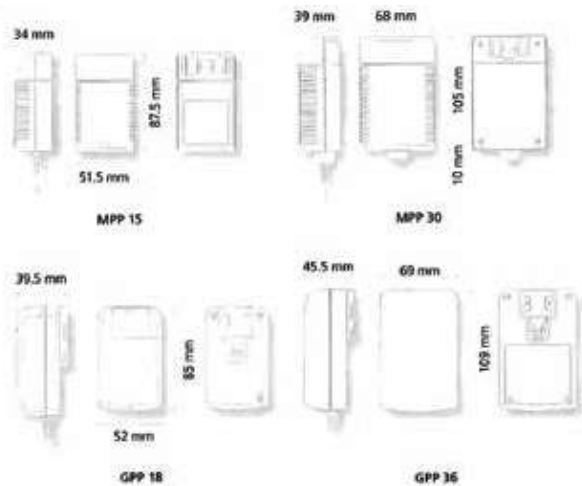
plug connector: AC input: (MPP/GPP) FRWO exchangeable mains plug system, PP 8 (Euro, USA/Japan, UK), DC output: Universal output plug system

NiCd/NiMH



Pb



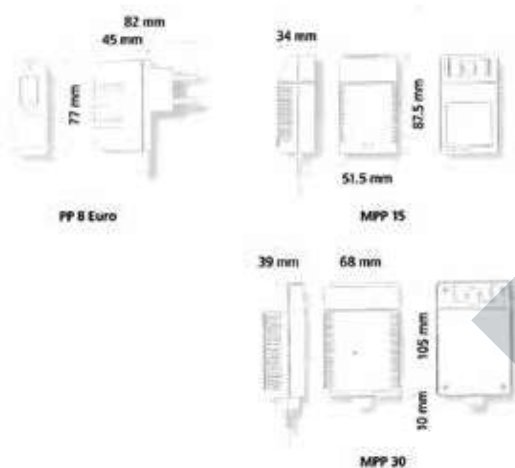


Output data				Switch-off criteria			Worldwide
Capacity	Current	cells	Housing	TI	TG	-DU	Order No.
3.5 - 7.0 Ah	950 mA	10-20	MPP 30	•	•		1811894
2.8 - 7.0 Ah	1000 mA	10-20	MPP 30	•		•	1812609
2.5 - 4.5 Ah	1400 mA	8-12	MPP 30	•	•		1880408
2.5 - 10 Ah	2000 mA	5-6	MPP 30	•		•	1818681
1.0 - 10.0 Ah	800 mA	4-10	MPP 15	•	•	•	1826002
1.0 - 10.0 Ah	800 mA	4-10	MPP 15	•		•	1890127
1.0 - 35.0 Ah	1.5 - 3.0 A*	2-6	GPP 18	•	•	•	1832656
1.0 - 35.0 Ah	1.6-4.0 A**	2-12	GPP 36	•	•	•	1834049

Switch-off criteria: TI = tome, TG = T, grad, -DU = -Delta-U

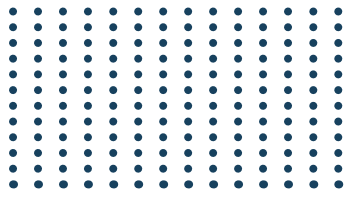
* without NTC 1.5 A

** without NTC 1.6 A



Output data					
Voltage	Current	Cells	Capacity	Housing	Order No.
6 V	900 mA	3	2.4-16.0 Ah	PP 8 EU	1890125
6 V	900 mA	3	2.4-16.0 Ah	PP 8 UK	1824106
6 V	900 mA	3	2.4-16.0 Ah	PP 8 US	1824107
6 V	1600 mA	3	4.8-32.0 Ah	MPP 15	1890126
6 V	3000 mA	3	9.0-60.0 Ah	MPP 30	1890129
12 V	500 mA	6	1.5-10.0 Ah	PP 8 EU	1824396
12 V	500 mA	6	1.5-10.0 Ah	PP 8 US	1825090
12 V	1000 mA	6	3.0-20.0 Ah	MPP 15	1890240
12 V	2000 mA	6	6.0-40.0 Ah	MPP 30	1890243
24 V	500 mA	12	1.5-10.0 Ah	MPP 15	1890241
24 V	1000 mA	12	3.0-20.0 Ah	MPP 30	1890130
24 V	1500 mA	12	4.5-30.0 Ah	MPP 30	1890222

Product	FW Type	Approvals
PP 15 NiCd/NiMH	FW 7219	CE GS c SP US
MPP 30 NiCd/NiMH	FW 7304	CE GS c SP US
GPP 18 NiCd/NiMH	FW 7290	CE
GPP 36 NiCd/NiMH	FW 7300	CE GS c SP US
PP 8 Lead Acid	FW 7118	CE GS c SP US
MPP 15 Lead Acid	FW 7218	CE GS c SP US
MPP 30 Lead Acid	FW 7318	CE GS c SP US



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		Ni-Cd Battery				Ni-Mh Battery			Li-ion Battery		Lithium Polymer Battery
		Std type	E type	R type	S type	L type	H type	P type	Std type	P type	
Power Tools	drills, saws, screwers and garden tools	●			■	●		■		■	
Household Appliances	remote controllers, shavers, electric toothbrushes	●			■	●		■		■	●
	vacuum cleaners	●			■	●		■		■	
	CD, VCD, DVD	●				●			■	■	■
Lighting	emergency lighting		■								
	flashlight, video lighting	●			■	■				■	
	military lighting	●			■	■				■	
Automatic office equipments	Portable computers, mobile phones	●				■			●		■
	Cordless phone, portable transceivers, walkie-talkie	●			■	■		●	●		■
	video and audio power	●				●			●		■
Military equipment	radio system power	●				●			●		■
	control system power	●		■		●			●	■	■
Vehicles	electric bicycles/motorcycles, electric slides	●			■	●		■		■	
	electric automobiles, metro, track locomotives				■			■		■	
Toys	electric toys	●			■	●		■		■	
	race-cars	●			■	●		■		■	
Other applications	medical appliances, instruments power	●	●			●	●		●		■
	Emergency power	●	●			●	●		●		
	Power supply			●				●		■	
	Various lightning	●	●			●	●		●		●

● Recommended use ■ Highly recommended use

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