

EverExceed[®]
power your applications

Ni-Cd Pocket Plate Range



EBM Range

Capacity: 10 Ah to 1000 Ah

www.everexceed.com

The block battery – for dependability

The wide range of low, medium and high capacity types makes accurate selection easy, based on discharge time and end of discharge voltage. Robust construction and generous electrolyte reserve enable the battery to withstand wide temperature fluctuations in stationary cycling behaviour over its 20+ years' life.

Built with a future Nickel-cadmium plates are completely reliable, with no risk of thermal runaway or sudden death. Generally operating between temperatures of -20°C to +50°C (-4°F to +122°F), they can tolerate extremes of -50°C to +70°C (-58°F to +158°F) for short periods.

With only periodic checks, the block battery will provide up to 20+ years' completely faithful service.

Trouble-free long cycle life

The EverExceed nickel-cadmium block battery's unique electrochemistry enables it to regularly withstand any depth of discharge.

Following a deep discharge the block battery is designed to recharge very quickly and economically, using standard single or two-level charging equipment.

Be sure of a low overall cost

The Ni-Cd block battery is the most highly cost-efficient solution to stored power requirements.

- No downtime
- No replacement costs
- Minimal maintenance
- Ease of installation
- 20+ years' operating life.

Easy storage and installation

Nickel-cadmium block batteries are quick and easy to install as original equipment and may be stored for many years in a discharged state under correct conditions.

On installation a simple bolted connector enables the battery to be rapidly commissioned.

Assured reliability

Ni-Cd is equally dependable in controlled city environments or harsh, unpredictable conditions in the world's most remote and unpopulated areas.

The Ni-Cd battery's block construction makes it highly resistant to electrical abuse and transport over rough terrain, precluding risk of subsequent failure.

Optimized for performance:

An electrolyte solution of potassium hydroxide and a small amount of lithium hydroxide acts only as an ion transfer medium, delivering optimum performance without causing base material degradation.

Good reserves and circulation of the electrolyte are achieved by a wide inter-plate space. Injection moulded plastic grids both separate plate and insulate plate edges. For extremely low temperatures a special high density electrolyte is available.

The block battery is fitted with a specially designed flame arresting flip top vent and does not produce corrosive vapours. The tough polypropylene casing ensures the battery's structural integrity throughout its long life.

EverExceed supports these Single Cell ranges with:

- quality approved manufacture to ISO 9001
- Single Cell batteries have been developed in line with the safety requirements of EN-50272-2 and components used (such as insulated cable connectors and end lug covers) are defined to ensure high protection against electric shocks (Ip2 level).
- full recycling service to protect the environment



Protective cover

- to prevent external short-circuits
- in line with EN 50272-2 (safety) with IP2 level



Plate group bus

Connects the plate tabs with the terminal post. Plate tabs and terminal post are projection-welded to the plate group bus.

Plate

Horizontal pockets of double-perforated steel strips.

Cell container

Material: translucent polypropylene.

Flame-arresting vents

Material: polypropylene.

Plate tab

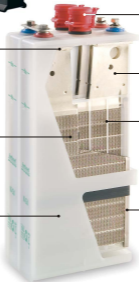
Spot-welded both to the plate side-frames and to the upper edge of the pocket plate.

Separating grids

These separate the plates and insulate the plate frames from each other. The grids allow free circulation of electrolyte between the plates.

Plate frame

Seals the plate pockets and serves as a current collector.



The cells are welded together to form rugged blocks of 1 - 6 cells depending on the cell size and type.

The EverExceed Single Cell ranges fully comply and exceed the IEC 60623 standard requirements.

Performance Data

Many nickel-cadmium batteries are used in stationary standby power applications where discharges occur infrequently and the battery is continuously charged by a float or constant potential charge.

Under these circumstances there is a modification in the level of the discharge curve and allowances must be made for

this when sizing the battery. In order to simplify this process, the data EverExceed supplies in this publication has both the fully charged data to IEC 60623 and the fully charged data after prolonged float charge, which can be used directly in battery sizing calculations.

This phenomenon occurs with all nickel-cadmium batteries, but some other manufacturers of nickel-cadmium batteries may not take this effect into account in published data.

When calculating for deep discharges (0.85 V and 0.85 V) it is not necessary to take this effect into account.

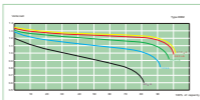
Capacity and dimensions

Cell Type	Capacity (CS Ah)	Dimensions						Weight				Terminal	Cell Case Material
		Length		Width		Height		Without Electrolyte		With Electrolyte			
		mm	in.	mm	in.	mm	in.	kg	lb.	kg	lb.		
EBM10	10	48	1.9	81	3.2	245	9.6	1.2	3.3	1.5	4	M 6	MS
EBM15	15	48	1.9	81	3.2	245	9.6	1.5	3.3	1.8	4.0	MS	MS
EBM20	20	68	2.7	134	5.3	245	9.6	1.6	3.5	2.5	5.5	MS	PP
EBM30	30	70	2.8	134	5.3	285	11.2	2.4	5.3	3.6	7.9	MS	MS
EBM30-(R)	30	68	2.7	134	5.3	245	9.6	2.0	4.4	3.0	6.6	MS	PP
EBM40	40	70	2.8	134	5.3	285	11.2	2.8	6.2	4.0	8.8	MS	MS
EBM48	48	70	2.8	134	5.3	285	11.2	3.4	7.5	4.2	9.1	MS	MS
EBM50	50	70	2.8	134	5.3	285	11.2	3.2	7.1	4.2	9.3	MS	MS
EBM60	60	80	3.1	141	5.6	370	14.6	4.7	10.4	6.4	14.1	MS	MS
EBM60-(R)	60	70	2.8	134	5.3	285	11.2	4.2	9.3	4.8	10.6	MS	MS
EBM60-(R)	60	80	3.1	141	5.6	370	14.6	4.2	9.3	6.0	13.2	MS	MS
EBM70	70	80	3.1	141	5.6	370	14.6	4.5	9.9	6.4	14.1	MS	PP
EBM75	75	80	3.1	141	5.6	370	14.6	4.6	10.1	6.6	14.6	MS	MS
EBM80	80	106	4.2	164	6.5	345	13.6	5.5	12.1	8.0	17.6	MS	MS
EBM80-(R)	80	80	3.1	141	5.6	370	14.6	4.8	10.6	6.6	14.6	MS	MS
EBM85	85	80	3.1	141	5.6	370	14.6	5.0	11.0	6.6	14.6	MS	PP
EBM85-(R)	85	106	4.2	164	6.5	345	13.6	5.6	12.3	8.5	18.7	MS	PP
EBM95	95	106	4.2	164	6.5	345	13.6	6.0	13.2	9.0	19.8	MS	PP
EBM100	100	106	4.2	164	6.5	345	13.6	6.5	14.3	9.0	19.8	MS	MS
EBM100-(R)	100	68	2.7	138	5.4	268	10.6	4.0	8.8	4.8	10.6	MS	MS
EBM100-(R)	100	79	3.1	139	5.5	365	14.4	5.6	12.3	6.8	15.0	MS	MS
EBM100-(RV)	100	106	4.2	164	6.5	345	13.6	6.5	14.3	9.0	19.8	MS	PP
EBM100-(V)	100	73	2.9	123	4.8	309	12.2	4.0	8.8	4.8	10.6	MS	PP
EBM100-(V)	100	80	3.1	141	5.6	370	14.6	5.6	12.3	6.8	15.0	MS	PP
EBM120	120	164	6.5	167	6.6	345	13.6	7.8	17.2	12.0	26.5	MS	MS
EBM120-(R)	120	106	4.2	164	6.5	345	13.6	7.0	15.4	9.5	20.9	MS	PP
EBM120-(RV)	120	92	3.6	141	5.6	365	14.4	5.5	12.1	7.5	16.5	MS	PP
EBM140-(RV)	140	92	3.6	141	5.6	365	14.4	6.5	14.3	8.0	17.6	M10	PP
EBM150	150	164	6.5	167	6.6	345	13.6	9.0	19.8	13.0	28.7	M10	MS
EBM160	160	164	6.5	167	6.6	345	13.6	9.5	20.9	12.5	27.6	M10	PP
EBM200	200	138	5.4	276	10.9	420	16.5	13.5	29.8	20.0	44.1	M10	MS
EBM200-(R)	200	138	5.4	276	10.9	425	16.7	13.5	29.8	20.0	44.1	M10	PP
EBM200-(R)	200	164	6.5	167	6.6	345	13.6	11.0	24.3	14.5	32.0	M10	PP
EBM200-(RV)	200	162	6.4	200	7.9	450	17.7	14.0	30.9	21.0	46.3	M10	PP
EBM200-(V)	200	138	5.4	276	10.9	450	17.7	11.0	24.3	14.5	32.0	M10	PP
EBM250	250	138	5.4	276	10.9	420	16.5	15.0	33.1	20.7	45.6	M10	MS
EBM250-(R)	250	138	5.4	276	10.9	425	16.7	15.0	33.1	22.0	48.5	M10	PP
EBM250-(R)	250	138	5.4	276	10.9	450	17.7	15.5	34.2	22.0	48.5	M10	PP
EBM250-(RV)	250	152	6.0	170	6.7	385	15.2	13.0	28.7	16.0	35.3	M10	PP
EBM250-(V)	250	162	6.4	200	7.9	450	17.7	15.0	33.1	22.0	48.5	M10	PP
EBM280	280	138	5.4	276	10.9	450	17.7	15.5	34.2	22.0	48.5	2-M10	PP

EverExceed EBM batteries fulfil all requirements specified by IEC publication 60623.

Cell Type	Capacity (CS Ah)	Dimensions						Weight				Terminal	Cell Case Material
		Length		Width		Height		Without Electrolyte		With Electrolyte			
		mm	in	mm	in	mm	in	kg	lb.	kg	lb.		
EBM300	300	171	6.7	186	7.3	560	22.0	18.5	40.8	23.0	50.7	2-M10	MB5
EBM300-(II)	300	138	5.4	276	10.9	450	17.7	17.5	38.6	23.0	50.7	2-M10	MB5
EBM300-(IV)	300	138	5.4	276	10.9	490	19.3	17.5	38.6	25.0	55.1	2-M10	PP
EBM300-(V)	300	162	6.4	200	7.9	450	17.7	17.5	38.6	23.0	50.7	2-M10	PP
EBM346	346	162	6.4	200	7.9	450	17.7	18.5	40.8	24.0	52.9	2-M10	PP
EBM350	350	176	6.9	291	11.5	505	19.9	23.5	51.8	35.0	77.2	2-M10	MB5
EBM350-(II)	350	138	5.4	276	10.9	450	17.7	20.0	44.1	25.0	55.1	2-M10	PP
EBM350-(III)	350	138	5.4	276	10.9	490	19.3	20.0	44.1	27.0	59.5	2-M10	PP
EBM350-(IV)	350	162	6.4	200	7.9	450	17.7	18.5	40.8	24.0	52.9	2-M10	PP
EBM380	380	176	6.9	291	11.5	505	19.9	24.0	52.9	36.0	79.4	2-M10	MB5
EBM380-(II)	380	138	5.4	276	10.9	490	19.3	21.0	46.3	26.0	57.3	2-M10	MB5
EBM400	400	176	6.9	291	11.5	505	19.9	25.0	55.1	38.0	83.8	2-M10	MB5
EBM400-(II)	400	138	5.4	276	10.9	490	19.3	22.0	48.5	27.0	59.5	2-M10	PP
EBM500	500	176	6.9	291	11.5	505	19.9	28.0	61.7	40.0	88.2	3-M10	MB5
EBM600	600	176	6.9	291	11.5	505	19.9	31.0	68.3	42.0	92.6	3-M10	MB5
EBM700	700	186	7.3	306	12.1	565	22.2	42.0	92.6	58.0	128	3-M10	MB5
EBM800	800	186	7.3	306	12.1	565	22.2	44.0	97.0	60.0	132	4-M10	MB5
EBM900	900	186	7.3	306	12.1	565	22.2	46.0	101	64.0	141	4-M10	MB5
EBM1000	1000	186	7.3	306	12.1	565	22.2	50.0	110	65.0	143	5-M10	MB5

EverExceed EBM batteries fulfill all requirements specified by IEC publication 60623.



Data for for railway on-board applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(±68°F ±9°F)

Final voltage: 1.14 V/cell

Cell Type	CS A6	Discharge Time in Hours							Discharge Time in Minutes							Time in Seconds		
		10	8	5	3	2	1.5	1	45	30	15	10	5	1	30	5	1	
EBM50	10	1.01	1.26	2.02	3.19	4.17	4.83	5.78	6.00	6.80	7.80	8.77	9.83	11.3	16.0	17.9	20.9	23.3
EBM55	15	1.51	1.89	3.03	4.78	6.35	7.40	8.55	9.00	10.25	11.9	13.7	15.5	16.9	26.0	26.9	31.3	35.0
EBM50	20	2.01	2.52	4.04	6.37	8.33	8.87	11.4	12.0	13.7	15.9	17.5	19.3	22.5	31.9	35.9	41.7	46.8
EBM50	30	3.02	3.78	6.06	9.56	12.5	14.8	17.1	18.0	20.5	23.8	26.3	28.9	33.8	47.9	53.8	62.6	69.9
EBM50-VI	30	3.02	3.78	6.06	9.56	12.5	14.8	17.1	18.0	20.5	23.8	26.3	28.9	33.8	47.9	53.8	62.6	69.9
EBM60	40	4.03	5.04	8.08	12.7	16.6	19.7	22.8	24.0	26.9	31.7	34.9	38.6	45.1	63.7	71.5	83.4	93.2
EBM65	48	4.84	6.05	9.79	15.2	19.9	23.6	27.4	28.8	32.3	38.0	41.9	46.3	54.1	76.4	85.8	100	112
EBM50	50	5.04	6.33	10.1	15.9	20.8	24.7	28.5	30.0	33.5	39.5	43.7	48.3	56.4	79.7	89.5	105	117
EBM60	60	6.04	7.54	12.1	18.1	24.9	29.6	34.2	36.0	40.2	47.5	52.3	57.9	67.6	95.4	109	127	143
EBM60-VI	60	6.04	7.54	12.1	18.1	24.9	29.6	34.2	36.0	40.2	47.5	52.3	57.9	67.6	95.4	109	127	143
EBM60-VI	60	6.04	7.54	12.1	18.1	24.9	29.6	34.2	36.0	40.2	47.5	52.3	57.9	67.6	95.4	109	127	143
EBM70	70	7.05	8.82	14.1	22.3	29.1	34.5	39.8	42.0	46.9	55.4	61.0	67.6	78.9	111	127	148	167
EBM75	75	7.56	9.45	15.3	23.9	31.2	37.1	42.8	45.0	49.8	59.4	64.1	72.4	84.6	117	133	155	168
EBM80	80	8.06	10.1	16.2	25.5	33.3	39.6	45.7	48.0	52.1	62.8	68.4	77.2	90.2	125	142	165	180
EBM80-VI	80	8.06	10.1	16.2	25.5	33.3	39.6	45.7	48.0	52.1	62.8	68.4	77.2	90.2	125	142	165	180
EBM85	85	8.56	10.7	17.1	27.0	35.3	42.0	48.4	51.0	55.3	66.8	72.6	82.1	95.8	134	151	177	190
EBM85-VI	85	8.56	10.7	17.1	27.0	35.3	42.0	48.4	51.0	55.3	66.8	72.6	82.1	95.8	134	151	177	190
EBM95	95	9.57	12.0	18.1	30.2	38.5	46.9	54.1	57.0	61.8	74.7	81.1	91.8	107	150	169	196	212
EBM100	100	10.1	12.6	20.2	31.8	41.6	49.4	57.0	60.0	66.9	79.9	87.2	96.6	112	160	181	210	225
EBM100-VI	100	10.1	12.6	20.2	31.8	41.6	49.4	57.0	60.0	66.9	79.9	87.2	96.6	112	160	181	210	225
EBM100-VI	100	10.1	12.6	20.2	31.8	41.6	49.4	57.0	60.0	66.9	79.9	87.2	96.6	112	160	181	210	225
EBM100-VI	100	10.1	12.6	20.2	31.8	41.6	49.4	57.0	60.0	66.9	79.9	87.2	96.6	112	160	181	210	225
EBM120	120	12.1	15.1	24.3	36.3	49.9	59.3	68.4	72.0	80.2	94.6	105	115	135	192	215	251	279
EBM120-VI	120	12.1	15.1	24.3	36.3	49.9	59.3	68.4	72.0	80.2	94.6	105	115	135	192	215	251	279
EBM120-VI	120	12.1	15.1	24.3	36.3	49.9	59.3	68.4	72.0	80.2	94.6	105	115	135	192	215	251	279
EBM150-VI	150	15.1	18.9	30.3	47.8	62.5	74.2	85.5	90.0	101	119	132	144	169	240	269	315	352
EBM150	150	15.1	18.9	30.3	47.8	62.5	74.2	85.5	90.0	101	119	132	144	169	240	269	315	352
EBM160	160	16.1	20.2	32.3	51.0	66.7	79.1	91.2	96.0	108	127	141	154	180	256	287	336	373
EBM200	200	20.2	25.2	40.4	61.7	83.3	98.9	114	120	135	160	175	190	225	319	358	419	467
EBM200-VI	200	20.2	25.2	40.4	61.7	83.3	98.9	114	120	135	160	175	190	225	319	358	419	467
EBM200-VI	200	20.2	25.2	40.4	61.7	83.3	98.9	114	120	135	160	175	190	225	319	358	419	467
EBM200-VI	200	20.2	25.2	40.4	61.7	83.3	98.9	114	120	135	160	175	190	225	319	358	419	467
EBM250	250	25.3	31.5	50.5	79.5	104	124	143	150	167	197	218	242	280	400	453	525	588
EBM250-VI	250	25.3	31.5	50.5	79.5	104	124	143	150	167	197	218	242	280	400	453	525	588
EBM250-VI	250	25.3	31.5	50.5	79.5	104	124	143	150	167	197	218	242	280	400	453	525	588
EBM250-VI	250	25.3	31.5	50.5	79.5	104	124	143	150	167	197	218	242	280	400	453	525	588
EBM300	300	30.2	37.8	60.6	95.6	125	148	171	180	201	235	264	289	338	476	540	627	699
EBM300-VI	300	30.2	37.8	60.6	95.6	125	148	171	180	201	235	264	289	338	476	540	627	699
EBM300-VI	300	30.2	37.8	60.6	95.6	125	148	171	180	201	235	264	289	338	476	540	627	699
EBM300-VI	300	30.2	37.8	60.6	95.6	125	148	171	180	201	235	264	289	338	476	540	627	699
EBM350	350	35.2	44.1	70.7	111	145	173	199	210	235	279	305	338	394	558	630	731	815
EBM350-VI	350	35.2	44.1	70.7	111	145	173	199	210	235	279	305	338	394	558	630	731	815
EBM350-VI	350	35.2	44.1	70.7	111	145	173	199	210	235	279	305	338	394	558	630	731	815
EBM350-VI	350	35.2	44.1	70.7	111	145	173	199	210	235	279	305	338	394	558	630	731	815
EBM380	380	38.2	47.9	76.8	121	157	188	216	228	255	303	331	367	428	606	684	794	885
EBM380-VI	380	38.2	47.9	76.8	121	157	188	216	228	255	303	331	367	428	606	684	794	885
EBM400	400	40.3	50.4	80.8	127	166	197	226	240	269	318	349	386	451	637	734	839	932
EBM400-VI	400	40.3	50.4	80.8	127	166	197	226	240	269	318	349	386	451	637	734	839	932
EBM500	500	50.4	63.0	101	159	208	247	285	300	336	397	436	483	564	796	894	1041	1191
EBM600	600	60.4	75.6	121	191	249	296	342	360	402	473	524	576	676	955	1072	1252	1432
EBM700	700	70.5	88.2	141	223	291	346	399	420	469	552	611	676	789	1111	1253	1461	1631
EBM800	800	80.6	100	161	254	333	395	456	480	535	631	697	772	902	1273	1433	1673	1892
EBM900	900	90.7	113	181	284	375	444	513	540	602	710	784	869	1015	1432	1612	1861	2100
EBM1000	1000	101	125	201	318	416	494	570	600	669	789	871	965	1128	1581	1791	2090	2328

Data for stationary applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.10 V/cell

Cell Type	Ct Ah	Discharge Time in Hours					Discharge Time in Minutes					Time in Seconds						
		10	8	5	3	1.5	45	30	15	10	5	1	30	5	1			
EBM50	10	1.03	1.28	2.04	3.28	4.50	5.50	6.77	7.43	8.50	10.2	10.8	12.1	13.7	18.0	19.0	23.9	28.1
EBM55	15	1.55	1.92	3.07	4.92	6.75	8.25	10.3	11.2	12.8	15.4	16.2	18.2	20.6	27.0	28.6	35.9	42.2
EBM50	20	2.07	2.55	4.08	6.50	9.00	11.0	13.5	14.9	17.0	20.5	21.6	24.3	27.5	36.0	38.1	47.9	54.2
EBM50	30	3.10	3.83	6.13	9.84	13.5	16.5	20.3	22.3	25.5	30.7	32.4	36.4	41.2	54.0	57.1	71.8	84.3
EBM50-(R)	30	3.10	3.83	6.13	9.84	13.5	16.5	20.3	22.3	25.5	30.7	32.4	36.4	41.2	54.0	57.1	71.8	84.3
EBM50	40	4.10	5.11	8.18	13.1	18.0	22.1	27.1	29.7	33.9	41.0	43.2	48.9	54.9	72.0	76.2	95.7	115
EBM55	48	4.82	6.13	9.82	15.7	21.6	26.5	32.5	35.6	40.7	49.2	51.8	58.7	65.9	86.4	91.4	115	138
EBM50	50	5.10	6.39	10.2	16.4	22.6	27.6	33.9	37.2	42.6	51.3	54.0	60.7	68.7	90.0	95.2	119	140
EBM50	60	6.15	7.64	12.2	19.6	27.1	33.1	40.7	44.6	50	61.5	64.8	72.9	82.4	108	114	143	171
EBM50-(R)	60	6.15	7.64	12.2	19.6	27.1	33.1	40.7	44.6	50	61.5	64.8	72.9	82.4	108	114	143	171
EBM50-88	60	6.15	7.64	12.2	19.6	27.1	33.1	40.7	44.6	50	61.5	64.8	72.9	82.4	108	114	143	171
EBM70	70	7.18	8.94	14.2	22.9	31.6	38.6	47.5	52.0	70.0	71.8	75.6	85.1	96.1	126	133	167	200
EBM75	75	7.58	9.45	15.2	23.9	31.2	37.1	42.8	45.0	48.8	58.9	64.1	72.4	84.6	117	123	155	189
EBM80	80	8.06	10.1	16.2	25.5	33.3	39.6	45.7	48.0	52.1	62.8	68.4	77.2	90.2	125	132	165	198
EBM80-(R)	80	8.06	10.1	16.2	25.5	33.3	39.6	45.7	48.0	52.1	62.8	68.4	77.2	90.2	125	132	165	198
EBM85	85	8.72	10.8	17.3	27.8	36.4	42.9	47.7	49.5	74.3	87.2	91.8	103	116	153	161	203	235
EBM85-(R)	85	8.72	10.8	17.3	27.8	36.4	42.9	47.7	49.5	74.3	87.2	91.8	103	116	153	161	203	235
EBM85	95	9.75	12.1	18.3	31.1	42.9	52.4	64.5	71.0	83.0	97.5	103	115	130	171	180	227	263
EBM100	100	10.2	12.7	20.4	32.8	45.2	55.2	67.9	74.4	84.9	102	108	121	137	180	190	239	282
EBM100-(R)	100	10.2	12.7	20.4	32.8	45.2	55.2	67.9	74.4	84.9	102	108	121	137	180	190	239	282
EBM100-(V)	100	10.2	12.7	20.4	32.8	45.2	55.2	67.9	74.4	84.9	102	108	121	137	180	190	239	282
EBM100-(V)	100	10.2	12.7	20.4	32.8	45.2	55.2	67.9	74.4	84.9	102	108	121	137	180	190	239	282
EBM100-(V)	100	10.2	12.7	20.4	32.8	45.2	55.2	67.9	74.4	84.9	102	108	121	137	180	190	239	282
EBM120	120	12.3	15.3	24.5	38.3	54.2	66.3	81.5	89.2	103	123	129	145	164	216	228	287	335
EBM120-(R)	120	12.3	15.3	24.5	38.3	54.2	66.3	81.5	89.2	103	123	129	145	164	216	228	287	335
EBM120-(V)	120	12.3	15.3	24.5	38.3	54.2	66.3	81.5	89.2	103	123	129	145	164	216	228	287	335
EBM140-(V)	150	15.1	18.9	30.5	47.9	67.5	74.2	85.5	90.0	101	119	132	144	169	240	249	315	362
EBM150	150	15.3	19.2	30.6	48.2	67.8	82.8	101	111	128	153	162	182	206	270	285	359	421
EBM160	160	16.3	20.5	32.8	52.5	72.3	88.3	108	118	137	163	173	194	220	288	304	383	449
EBM200	200	20.5	25.5	40.9	65.6	90.4	110	135	148	170	205	216	243	274	360	381	478	559
EBM200-(R)	200	20.5	25.5	40.9	65.6	90.4	110	135	148	170	205	216	243	274	360	381	478	559
EBM200-(V)	200	20.5	25.5	40.9	65.6	90.4	110	135	148	170	205	216	243	274	360	381	478	559
EBM200-(V)	200	20.5	25.5	40.9	65.6	90.4	110	135	148	170	205	216	243	274	360	381	478	559
EBM200-(V)	200	20.5	25.5	40.9	65.6	90.4	110	135	148	170	205	216	243	274	360	381	478	559
EBM250	250	25.5	31.8	51.8	82.0	113	138	169	186	212	255	270	303	343	450	475	598	705
EBM250-(R)	250	25.5	31.8	51.8	82.0	113	138	169	186	212	255	270	303	343	450	475	598	705
EBM250-(V)	250	25.5	31.8	51.8	82.0	113	138	169	186	212	255	270	303	343	450	475	598	705
EBM250-(V)	250	25.5	31.8	51.8	82.0	113	138	169	186	212	255	270	303	343	450	475	598	705
EBM250-(V)	250	25.5	31.8	51.8	82.0	113	138	169	186	212	255	270	303	343	450	475	598	705
EBM280	280	28.8	35.6	57.1	91.8	127	155	189	208	237	286	302	339	384	504	532	670	790
EBM300	300	30.7	38.3	61.3	98.4	135	165	203	223	253	307	324	364	412	540	571	718	838
EBM300-(R)	300	30.7	38.3	61.3	98.4	135	165	203	223	253	307	324	364	412	540	571	718	838
EBM300-(V)	300	30.7	38.3	61.3	98.4	135	165	203	223	253	307	324	364	412	540	571	718	838
EBM300-(V)	300	30.7	38.3	61.3	98.4	135	165	203	223	253	307	324	364	412	540	571	718	838
EBM300-(V)	300	30.7	38.3	61.3	98.4	135	165	203	223	253	307	324	364	412	540	571	718	838
EBM340	340	35.4	44.2	70.7	113	158	190	234	257	292	354	374	424	475	623	659	828	968
EBM350	350	35.9	44.7	71.8	114	158	193	237	260	299	359	378	425	480	630	666	837	978
EBM350-(R)	350	35.9	44.7	71.8	114	158	193	237	260	299	359	378	425	480	630	666	837	978
EBM350-(V)	350	35.9	44.7	71.8	114	158	193	237	260	299	359	378	425	480	630	666	837	978
EBM350-(V)	350	35.9	44.7	71.8	114	158	193	237	260	299	359	378	425	480	630	666	837	978
EBM350-(V)	350	35.9	44.7	71.8	114	158	193	237	260	299	359	378	425	480	630	666	837	978
EBM380	380	39.0	48.5	77.2	124	172	210	257	282	325	390	410	461	513	664	723	909	1060
EBM380-(R)	380	39.0	48.5	77.2	124	172	210	257	282	325	390	410	461	513	664	723	909	1060
EBM400	400	41.0	51.1	81.8	131	180	221	271	297	343	410	432	486	549	720	762	957	1115
EBM400-(R)	400	41.0	51.1	81.8	131	180	221	271	297	343	410	432	486	549	720	762	957	1115
EBM400-(V)	400	41.3	63.9	102	164	226	276	336	372	436	513	540	607	687	900	952	1197	1385
EBM450	450	41.5	79.6	122	196	271	331	407	446	511	615	648	726	824	1080	1143	1436	1688
EBM700	700	71.8	89.4	143	229	316	386	475	520	587	718	756	860	961	1260	1323	1635	1940
EBM800	800	82.1	110	163	262	349	442	543	589	679	820	864	972	1096	1440	1524	1915	2225
EBM900	900	92.4	115	183	295	406	497	611	669	764	923	972	1094	1236	1620	1715	2154	2503
EBM1000	1000	103	128	204	328	451	553	679	744	849	1025	1080	1215	1374	1800	1905	2394	2791

Data for for railway on-board applications

Performance after prolonged float charge of fully charged cells

Available amperes at +20°C ±5°C(+68°F ±9°F)

Final voltage: 1.05 V/cell

Cell Type	CS Ah	Discharge Time in Hours							Discharge Time in Minutes							Time in Seconds		
		10	8	5	3	2	1.5	1	45	30	15	10	5	1	30	5	1	
EBM50	10	1.04	1.39	2.07	3.33	4.70	5.73	7.53	9.00	11.0	12.6	15.3	14.3	16.7	21.8	24.1	29.1	31.4
EBM55	15	1.56	1.95	3.11	5.00	7.05	8.60	11.3	13.5	16.5	18.6	20.0	21.5	25.1	32.8	36.2	43.7	47.1
EBM50	20	2.07	2.59	4.14	6.47	9.40	11.5	15.1	18.0	22.0	24.8	26.8	27.5	33.4	43.7	48.2	58.2	62.8
EBM50	30	3.11	3.89	6.21	10.0	14.1	17.2	22.8	27.0	33.0	37.2	38.9	43.0	50.1	65.5	72.3	87.3	94.2
EBM50-III	30	3.11	3.89	6.21	10.0	14.1	17.2	22.8	27.0	33.0	37.2	38.9	43.0	50.1	65.5	72.3	87.3	94.2
EBM60	40	4.15	5.18	8.28	13.3	18.8	22.9	30.2	36.0	44.0	49.6	52.2	57.5	66.8	87.3	96.4	116	126
EBM65	48	4.96	6.22	9.94	16.0	22.6	27.5	36.2	43.2	52.8	58.5	63.8	69.0	80.2	105	116	139	151
EBM50	50	5.19	6.48	10.4	16.7	23.5	28.6	37.8	45.1	55.0	62.1	66.6	71.1	83.5	109	120	145	158
EBM60	60	6.22	7.77	12.3	20.0	28.2	34.4	45.3	54.1	66.0	74.5	79.9	85.9	100	131	144	174	190
EBM60-III	60	6.22	7.77	12.3	20.0	28.2	34.4	45.3	54.1	66.0	74.5	79.9	85.9	100	131	144	174	190
EBM60	70	7.26	9.07	14.4	23.3	32.9	40.1	52.9	63.1	77.0	86.9	92.2	100	117	153	168	203	224
EBM75	75	7.76	9.72	15.5	25.1	35.3	43.0	56.7	67.6	82.6	92.1	98.9	107	125	163	180	218	235
EBM80	80	8.30	10.4	16.5	26.8	37.7	45.9	60.5	72.1	88.1	98.3	107	114	133	174	192	233	251
EBM80-III	80	8.30	10.4	16.5	26.8	37.7	45.9	60.5	72.1	88.1	98.3	107	114	133	174	192	233	251
EBM85	85	8.80	11.0	17.5	28.4	40.0	48.7	64.2	76.7	93.6	105	113	122	142	185	205	247	265
EBM85-III	85	8.80	11.0	17.5	28.4	40.0	48.7	64.2	76.7	93.6	105	113	122	142	185	205	247	265
EBM95	95	9.86	12.3	19.4	31.7	44.7	54.4	71.8	85.7	105	117	126	136	159	207	229	278	296
EBM100	100	10.3	12.9	20.7	33.4	47.1	57.3	75.8	90.2	110	124	133	147	187	218	241	291	315
EBM100-III	100	10.3	12.9	20.7	33.4	47.1	57.3	75.8	90.2	110	124	133	147	187	218	241	291	315
EBM100-III	100	10.3	12.9	20.7	33.4	47.1	57.3	75.8	90.2	110	124	133	147	187	218	241	291	315
EBM100-III	100	10.3	12.9	20.7	33.4	47.1	57.3	75.8	90.2	110	124	133	147	187	218	241	291	315
EBM100-III	100	10.3	12.9	20.7	33.4	47.1	57.3	75.8	90.2	110	124	133	147	187	218	241	291	315
EBM120	120	12.4	15.5	24.8	40.1	56.5	68.8	90.7	108	132	149	159	176	200	262	289	349	381
EBM120-III	120	12.4	15.5	24.8	40.1	56.5	68.8	90.7	108	132	149	159	176	200	262	289	349	381
EBM120-III	120	12.4	15.5	24.8	40.1	56.5	68.8	90.7	108	132	149	159	176	200	262	289	349	381
EBM150	150	15.5	19.4	31.0	50.2	70.6	86.0	113	135	165	186	199	220	250	328	361	436	476
EBM150-III	150	15.5	19.4	31.0	50.2	70.6	86.0	113	135	165	186	199	217	250	327	361	436	475
EBM180	180	18.6	23.7	37.3	61.5	75.3	92	121	144	176	198	212	231	267	349	385	465	507
EBM200	200	20.7	25.9	41.4	66.9	94.2	114	151	180	220	248	266	290	334	436	482	528	626
EBM200-III	200	20.7	25.9	41.4	66.9	94.2	114	151	180	220	248	266	290	334	436	482	528	626
EBM200-III	200	20.7	25.9	41.4	66.9	94.2	114	151	180	220	248	266	290	334	436	482	528	626
EBM200-III	200	20.7	25.9	41.4	66.9	94.2	114	151	180	220	248	266	290	334	436	482	528	626
EBM250	250	25.8	32.3	51.8	83.5	118	143	189	226	275	310	333	368	418	545	603	728	788
EBM250-III	250	25.8	32.3	51.8	83.5	118	143	189	226	275	310	333	368	418	545	603	728	788
EBM250-III	250	25.8	32.3	51.8	83.5	118	143	189	226	275	310	333	368	418	545	603	728	788
EBM250-III	250	25.8	32.3	51.8	83.5	118	143	189	226	275	310	333	368	418	545	603	728	788
EBM250-III	250	25.8	32.3	51.8	83.5	118	143	189	226	275	310	333	368	418	545	603	728	788
EBM300	300	30.9	38.2	58.9	93.5	132	160	212	253	308	347	373	410	468	610	675	815	883
EBM300-III	300	31.1	38.9	62.1	100	141	172	226	270	330	372	399	431	501	655	723	873	939
EBM300-III	300	31.1	38.9	62.1	100	141	172	226	270	330	372	399	431	501	655	723	873	939
EBM300-III	300	31.1	38.9	62.1	100	141	172	226	270	330	372	399	431	501	655	723	873	939
EBM300-III	300	31.1	38.9	62.1	100	141	172	226	270	330	372	399	431	501	655	723	873	939
EBM300-III	300	31.1	38.9	62.1	100	141	172	226	270	330	372	399	431	501	655	723	873	939
EBM348	348	35.9	44.9	71.8	115	163	198	261	311	381	429	460	497	578	755	834	1007	1083
EBM350	350	36.3	45.3	72.4	117	164	200	264	315	385	434	466	505	584	764	844	1018	1093
EBM350-III	350	36.3	45.3	72.4	117	164	200	264	315	385	434	466	505	584	764	844	1018	1093
EBM350-III	350	36.3	45.3	72.4	117	164	200	264	315	385	434	466	505	584	764	844	1018	1093
EBM350-III	350	36.3	45.3	72.4	117	164	200	264	315	385	434	466	505	584	764	844	1018	1093
EBM350-III	350	36.3	45.3	72.4	117	164	200	264	315	385	434	466	505	584	764	844	1018	1093
EBM390	380	39.4	49.2	78.6	127	178	217	287	342	418	471	506	546	634	829	916	1105	1187
EBM390-III	380	39.4	49.2	78.6	127	178	217	287	342	418	471	506	546	634	829	916	1105	1187
EBM400	400	41.5	51.8	82.8	133	188	229	302	360	440	496	532	572	668	873	964	1164	1255
EBM400-III	400	41.5	51.8	82.8	133	188	229	302	360	440	496	532	572	668	873	964	1164	1255
EBM500	500	51.9	64.8	103	167	235	286	378	451	550	621	666	716	835	1080	1206	1465	1586
EBM500	600	62.2	77.7	124	200	282	344	453	541	660	745	799	859	1002	1310	1447	1748	1871
EBM700	700	72.8	90.7	144	234	329	401	529	631	771	869	922	1002	1169	1508	1688	2027	2181
EBM800	800	83.0	103	165	267	376	458	604	721	881	993	1055	1145	1326	1747	1929	2328	2510
EBM900	900	93.4	116	186	300	422	515	680	811	991	1117	1198	1288	1503	1960	2170	2619	2824
EBM1000	1000	104	129	206	334	470	573	755	901	1101	1241	1321	1421	1670	2184	2411	2910	3138

Calculation Methods

Information required for battery capacity calculation

The following information is needed for a precise battery capacity calculation:

-Nominal voltage of the system	-Load current required	-Backup time required
-Maximum voltage (for charging)	-Minimum voltage	-Temperature range
-Battery layout and available space	-Physical condition	

Float Voltage Operation

In these conditions the float voltage, being the voltage at which the general load circuit will operate, then a decision will have to be reached on the cell float voltage needed to maintain the battery in the required condition.

$$\text{Number of cells required} = \frac{\text{Circuit voltage}}{\text{Cell Float voltage}}$$

$$\text{Minimum cell voltage} = \frac{\text{Minimum D.C. voltage}}{\text{Number of cells}}$$

The most commonly used float voltages are 1.40-1.48 voltage per cell, but the exact figure has to be related carefully to circumstances.

For Example

An EverExceed Nickel Cadmium battery is required to maintain an inverter load of 50KVA at 0.8 power factor for a backup time of 30 minutes, at 20-25°C temperature. The DC voltage to the inverter operates within the limit of 265 volts with the battery on float charge to a minimum of 202 volts at end of back up time. The inverter has an 85% efficiency rate.

-Number of Cells (at recommended float of 1.44VPC) = 265/1.44=184cells

-Minimum Cell Voltage = 202/184=1.10 volts per cell

-Maximum Battery Current

$$= \frac{\text{Inverter load in KVA} \times \text{Power factor}}{\text{Min. cell voltage} \times \text{Number of cells} \times \text{Inverter efficiency}}$$

$$= \frac{50\text{KVA} \times 0.80}{1.10 \times 184 \times 0.85} = 232.5 \text{ Amps}$$

We shall choose the battery with capacity equal or just above 232.5Amps.

To meet the 30 minutes backup time requirement, we determine to choose the battery size from EBM Range.

From our catalogue data, the cell type is EBM300.

Battery shall comprise 184 cells of EverExceed Nickel Cadmium type EBM300.

System Voltage	Number of Cells	Spread Range Number of Cells
24	20	18-21
36	30	27-31
48	40	36-41
110	92	88-93
220	184	180-186

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