



The **WISE** Choice

## EASTMAN WORLD

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Eastman has a strong global presence and has tailored its products to meet the needs of the export market, providing high-quality energy storage and solar solutions.



## *PB ACID BATTERY*

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**Smart Series | Front Terminal Series**  
**High Rate Series | 2V Deep Cycle Series**

# Eastman Introduction

## Founded in 2006

Established in 2006, Eastman Auto & Power Limited is a well-known name in the field of solar energy, energy storage, and power electronics, boasting a USD 300 million revenue and a dedicated workforce of over 3,000 professionals. Building on the group's decades-long success and maintaining the trust of our partners, Mr. Jagdish Rai Singal ventured into the future of energy with Eastman Auto & Power Limited. Today, the business spans over 25 countries across Asia, Africa, Middle East, and Europe and provides the world with cutting-edge products that have set new benchmarks in their respective segments. Driven by innovation, we continually set industry standards, ensuring uninterrupted power supply for residential, commercial, and industrial applications.

Our global solar distribution business provides reliable and high-quality solar solutions, including solar inverters, solar panels, solar batteries (carbon, gel, lithium, and tubular), solar pump inverters, solar charge controllers, and more. Our products offer a range of solutions to help you make the switch to clean energy. With us as your unwavering partners, we forge a sustainable future, amplifying global excellence through transformative products and services.



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## VRLA BATTERY

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# SMART SERIES



# Smart Series

## EM5VB-EM200VB

### Overview

Eastman Smart series batteries are designed with state-of-the-art AGM (absorbent glass mat) technology, high-performance plates and electrolyte. With excellent value and characteristics, this range is suitable for all general purpose applications.

### Characteristics

- Capacity range: 1.2Ah to 250Ah
- Available in: 12V blocks.
- EUROBAT design life:
  - 12V ≤ 28Ah: 3-5 Years, standard commercial.
  - 12V > 28Ah: 12 Years, long life.
- Self-discharge per month: ≤ 3% at 25°C.
- Operation temperature range: - 20°C to + 50°C.
- Recommended operation temperature: 25°C.



### Application Scenarios

Emergency light systems, Firefighting equipment, Alarm systems, UPS, Electric toys, Medical equipment, Telecommunications, IT equipment.

### Certifications



### Product Features

- Stable quality & high reliability.
- Long service life.
- Maintenance-free operation.
- Heavy-duty grids.
- Low self-discharge.
- Container available in flame retardant (UL 94-V0).

### Product Specifications

Battery Model	Nominal Voltage [V]	Rated Capacity [Ah], 25°C			Internal Resistance [mΩ]	Terminal Type	Terminal Location	Design Life [years]		Weight [kg]	Length [mm]	Width [mm]	Height [mm]	Total Height [mm]
		20Hr (10.5V)	10Hr (10.5V)	1Hr (9.60V)				JIS 25°C	EUROBAT 20°C					
EM5VB	12	5	4.6	3	28.0	T1/T2	C	5	3-5	1.58±4%	90±1	70±1	101±1	107±1
EM7VB	12	7	6.5	4.2	25.0	T1/T2	F	5	3-5	2.10±4%	151±1.5	65±1	94±1	100±1
EM7.5VB	12	7.5	7	4.6	21.0	T1/T2	F	5	3-5	2.25±4%	151±1.5	65±1	94±1	100±1
EM9VB	12	9	8.4	5.4	19.0	T1/T2	F	5	3-5	2.65±4%	151±1.5	65±1	94±1	100±1
EM12VB	12	12	11	7.2	19.0	T1/T2	F	5	3-5	3.40±4%	151±1.5	98±1	95±1	101±1
EM18VB	12	18	16.8	11	15.0	T3/T12	D	5	3-5	5.20±4%	181±2	77±2	167±2	167±2
EM26VB	12	26	24	16	12.0	T4/T12	D	5	3-5	7.90±4%	166±2	175±2	125±2	125±2
		10Hr (10.8V)	3Hr (10.8V)	1Hr (10.5V)										
EM33VB	12	33	24	19	11.0	T14/T6	C	10	10/12	10.00±4%	195±2	130±2	155±2	180±2
EM40VB	12	40	30	22	9.0	T14	D	10	10/12	12.50±3%	197±2	165±2	170±2	170±2
EM55VB	12	55	41.1	30.5	6.5	T14	C	10	10/12	17.30±3%	230±2	138±2	211±2	215±2
EM65VB	12	65	51	37	6.5	T14	C	10	10/12	20.04±3%	350±2	166±2	179±2	179±2
EM75VB	12	75	57	43	5.5	T14	C	10	10/12	23.05±3%	260±2	168±2	211±2	215±2
EM100VB	12	100	75	55	4.5	T16	C	10	10/12	29.50±3%	330±2	171±2	214±2	220±2
EM150VB	12	150	114	88	4.0	T16	C	10	10/12	41.08±3%	485±2	172±2	240±2	240±2
EM200VB	12	200	150	110	3.5	T16	E	10	10/12	59.05±3%	522±2	238±2	218±2	222±2



**FRONT  
TERMINAL  
SERIES**



# Front Terminal Series

EM12-50-FT-EM12-200-FT

## Overview

Eastman Front Terminal Series batteries are mainly used in the area of communication. By adopting a new AGM separator and centralized venting system, the battery can be installed in different positions while maintaining high reliability. Available in gel technology also.



## Characteristics

- Capacity range: 50Ah to 200Ah.
- Available in: 12V blocks.
- EUROBAT design life: 10/12 years, Long Life.
- Self-discharge per month:  $\leq 3\%$  at 25°C.
- Operation temperature range: - 20°C to + 50°C .
- Recommended operation temperature: 25°C.

## Application Scenarios

UPS, Telecommunication, Solar Systems.

## Product Features

- Low internal resistance.
- Long service life.
- High energy density.
- Very low self-discharge.
- Container available in flame retardant (UL 94-V0).

## Certifications



## Product Specifications

Battery Model	Nominal Voltage [V]	Rated Capacity [Ah], 25°C			Internal Resistance [mΩ]	Terminal Type	Terminal Location	Design Life [years]		Weight [kg] ± 3%	Length [mm]	Width [mm]	Height [mm]	Total Height [mm]
		10Hr (10.8V)	20Hr (10.8V)	5Hr (10.8V)				JIS 25°C	EUROBAT 20°C					
		EM12-50-FT	12	50				53	42.7					
EM12-55-FT	12	55	58.4	47.0	7	T14	E	12	10/12	17.30±3%	277±2	106±2	221±2	221±2
EM12-75-FT	12	75	79.6	64	5.5	T14	E	12	10/12	24.50±3%	562±2	114±2	189±2	189±2
EM12-100-FT	12	100	106	85.5	5.50	T16	E	12	10/12	32.80±3%	395±2	110±2	286±2	286±2
EM12-105-FT	12	105	111.4	89.5	5.00	T16	E	12	10/12	32.00±3%	506±2	110±2	224±2	239±2
EM12-125-FT	12	125	132.6	100.5	4.50	T18	E	12	10/12	42.00±3%	550±2	105±2	315±2	315±2
EM12-150-FT	12	150	159	128	4.00	T16	E	12	10/12	47.50±3%	551±2	110±2	287±2	287±2
EM12-155-FT	12	155	164.4	132.5	4.00	T18	E	12	10/12	50.00±3%	546±2	125±2	315±2	315±2
EM12-165-FT	12	166	176	141.5	4.00	T16	E	12	10/12	50.00±3%	546±2	125±2	317±2	323±2
EM12-180-FT	12	180	190.8	153.5	3.50	T18	E	12	10/12	55.00±3%	546±2	125±2	315±2	315±2
EM12-200-FT	12	200	190.8	170.5	3.50	T18	E	12	10/12	60.50±3%	546±2	125±2	317±2	323±2



# HIGH RATE SERIES





# High Rate Series

EM12-21W-HR-EM12-520W-HR

## Overview

Eastman High Rate series batteries are specially designed for applications that require high power output. With their high-power density and low internal resistance, the HR series are the right choice for your most demanding applications.

## Characteristics

- Power range: 21W to 520W.
- Available in: 6V and 12V blocks.
- Self-discharge per month:  $\leq 3\%$  at 25°C.
- High performance at high current discharges over 2°C.
- EUROBAT design life:
  - 12V  $\leq 110$ W: 3 – 5 years, Standard Commercial.
  - 12V  $> 110$ W: 10/12 years, Long Life.
- Operation temperature range: - 20°C to + 50°C .
- Recommended operation temperature: 25°C.



## Application Scenarios

UPS, High-power UPS, Data Centers, Telecommunication & Electric Power Systems.

## Certifications

## Product Features

- Operation at a low internal pressure.
- Positive and negative plates in lead-calcium-tin alloy.
- Superior energy density.
- Very high power output.
- Container available in flame retardant (UL 94-V0).



## Product Specifications

Battery Model	Nominal Voltage [V]	Rated Power [W/cell] @15min 1,67V/cell, 25°C	Rated Capacity [Ah] 20Hr 1.80V/cell	Internal Resistance [mΩ]	Terminal Type	Terminal Location	Design Life [years]		Weight [kg]	Length [mm]	Width [mm]	Height [mm]	Total Height [mm]
							JIS 25°C	EUROBAT 20°C					
EM12-21W-HR	12	21	5	23.0	T1/T2	C	5	3-5	1.62±4%	90±1	70±1	101±1	107±1
EM12-24W-HR	12	24	6	19.0	T1/T2	F	5	3-5	1.94±4%	151±1.5	51±1	94±1	99±1
EM12-34W-HR	12	34	9	14.0	T1/T2	F	5	3-5	2.60±4%	151±1.5	65±1	94±1	100±1
EM12-51W-HR	12	51	12	11.0	T1/T2	F	5	3-5	4.00±4%	151±1.5	98±1	95±1	101±1
EM12-76W-HR	12	76	18	12.0	T12	D	5	3-5	5.80±3%	181±2	77±1	167±1	167±2
EM12-100W-HR	12	100	28	9.0	T12	D	5	3-5	8.80±3%	166±2	175±2	125±2	125±2
EM12-110W-HR	12	110	28	9.0	T14	D	5	3-5	8.80±3%	166±2	126±2	174±2	174±2
EM12-130W-HR	12	130	35	8.0	T14	C	10	10/12	11.50±3%	195±2	130±2	155±2	167±2
EM12-160W-HR	12	160	48	7.0	T14	D	10	10/12	14.30±3%	197±2	165±2	170±2	170±2
EM12-200W-HR	12	200	58	6.5	T14	C	10	10/12	17.30±3%	230±2	138±2	211±2	215±2
EM12-280W-HR	12	280	80	5.0	T14	C	10	10/12	25.30±3%	260±2	168±2	211±2	215±2
EM12-330W-HR	12	330	100	5.0	T14	C	10	10/12	28.50±3%	306±2	169±2	211±2	215±2
EM12-390W-HR	12	390	115	4.0	T16	C	10	10/12	32.70±3%	330±2	171±2	214±2	220±2
EM12-475W-HR	12	475	145	3.8	T16	C	10	10/12	44.00±3%	342±2	172±2	280±2	285±2
EM12-520W-HR	12	520	155	3.4	T16	C	10	10/12	47.00±3%	342±2	172±2	280±2	285±2



**2V DEEP CYCLE  
SERIES**



# 2V Deep Cycle Series

EM2-200-DC-EM2-3000-DC

## Overview

Eastman Deep Cycle Series are manufactured specifically to provide outstanding performance in deep cycling applications. The batteries are designed using enhanced alloy contents plates and active paste materials.

## Characteristics

- Capacity range: 200Ah to 3000Ah.
- Available in: 2V cells.
- Cycle life:
  - 30% DOD: 1800 cycles (2V).
  - 50% DOD: 850 cycles (2V).
  - 100% DOD: 400 cycles (2V).
- EUROBAT design life:
  - 2V > 200Ah: >12 years, Very Long Life (depending on cycles).
- Self-discharge per month: ≤ 3% at 25°C.
- Operation temperature range: - 20°C to + 50°C.
- Recommended operation temperature: 25°C.



## Application Scenarios

Solar Systems, Wind systems, Power supply, Electrical vehicles, Wheelchairs & scooters.

## Product Features

- Excellent deep cycle design.
- Longer life in deep cycle applications.
- High power density.
- Excellent recovery from deep discharge.
- Wide working environment.
- Container available in flame retardant (UL 94-V0).

## Certifications



## Product Specifications

Battery Model	Nominal Voltage [V]	Rated Capacity [Ah], 25°C			Internal Resistance [mΩ]	Terminal Type	Terminal Location	Design Life [years]		Weight [kg]	Length [mm]	Width [mm]	Height [mm]	Total Height [mm]
		20Hr 1.80V/cell	10Hr 1.80V/cell	5Hr 1.80V/cell				JIS 25°C	EUROBAT 20°C					
		EM2-200-DC	2	211				200	182.5					
EM2-300-DC	2	322	300	278	0.75	T20	G	15	>12	19.50	171±2	151±2	330±2	364±2
EM2-400-DC	2	422	400	364.5	0.60	T20	H	15	>12	27.00	210±2	176±2	330±2	367±2
EM2-500-DC	2	533	500	460	0.50	T20	H	15	>12	31.50	241±2	271±2	330±2	367±2
EM2-600-DC	2	633	600	545	0.45	T20	H	15	>12	38.00	302±2	175±2	330±2	367±2
EM2-800-DC	2	844	800	730	0.35	T20	J	15	>12	53.00	410±2	175±2	330±2	367±2
EM2-1000-DC	2	1060	1000	910	0.28	T20	J	15	>12	63.00	475±2	175±2	330±2	367±2
EM2-1500-DC	2	1570	1500	1355	0.20	T20	K	15	>12	96.50	400±2	350±2	345±2	382±2
EM2-2000-DC	2	2110	2000	1825	0.17	T20	L	15	>12	131.00	490±2	350±2	345±2	382±2
EM2-3000-DC	2	3140	3000	2710	0.11	T20	L	15	>12	188.00	710±2	350±2	345±2	382±2

# Technical Information

## Charging & Discharging | Characteristics & Cycle Life

### Charge Voltage & Charge Current

Ambient Temperature: 25°C

Usage	Standby Use				Cycle Use			
	2V Cell	4V Battery	6V Battery	12V Battery	2V Cell	4V Battery	6V Battery	12V Battery
Charge Voltage (V)	2.25-2.30	4.50-4.60	6.75-6.90	13.5-13.8	2.40-2.50	4.80-5.00	7.25-7.50	14.5-15.0
Max Charge Current (A)	0.3C*	0.3C	0.3C	0.3C	0.3C	0.3C	0.3C	0.3C
Max Charge Current HR (A)	0.08P*	0.08P	0.08P	0.08P	0.08P	0.08P	0.08P	0.08P

### Discharge Voltage & Final Voltage

Ambient Temperature: 25°C

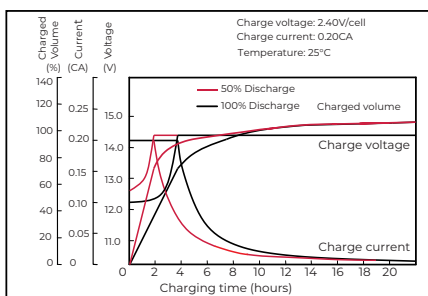
Discharge Current (A)	Final Voltage (V)			
	2V Battery	4V Battery	6V Battery	12V Battery
0.05C <sub>20</sub>	1.75	3.50	5.35	10.50
0.1C <sub>10</sub> ~ 0.25C <sub>10</sub>	1.80	3.60	5.40	10.80
0.55C <sub>20</sub>	1.75	3.50	5.25	10.50
1C <sub>10</sub> ~ 3C <sub>10</sub>	1.60	3.20	4.80	9.60

#### Notes

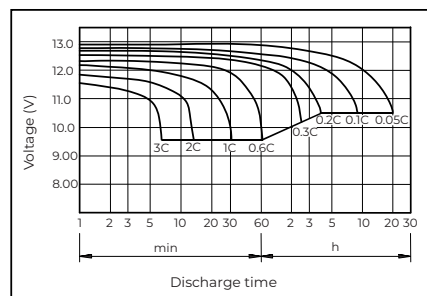
- “C” means Ah value of battery’s rated capacity. “P” means watt value of battery’s rated power (HR series).
- When the ambient temperature is outside of 15°C to 35°C range, use a temperature compensation factor  $\pm 3 \text{ mV}/^\circ\text{C}/\text{cell}$  (standby charge) or  $\pm 5 \text{ mV}/^\circ\text{C}/\text{cell}$  (cycle charge), starting from the standard centre point at 25°C.
- When charging, the ambient temperature should be in the range of - 10°C to + 50°C.
- End of discharge voltage should vary according to the discharge current.
- Battery voltage must be higher than its corresponding end voltage when discharge.
- Charge the batteries immediately after discharge.
- When discharging, the ambient temperature should be in the range of - 15°C to + 50°C.

### Characteristics & Cycle Life

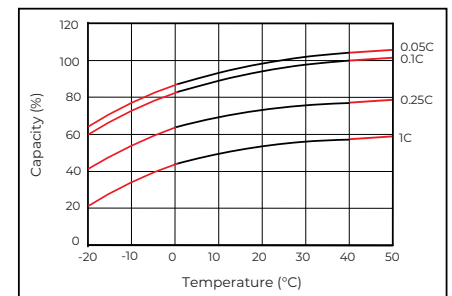
Charging Characteristics (25°C) - All Series



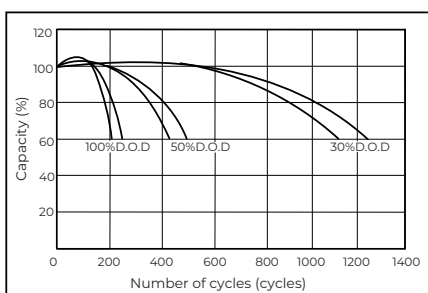
Discharge Characteristics (25°C) - All Series



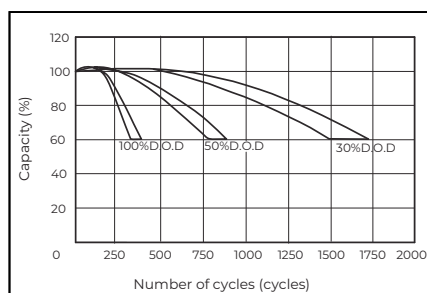
Temperature effects on capacity - All Series



Cycle Life on D.O.D (25°C) - Smart, FT & HR Series



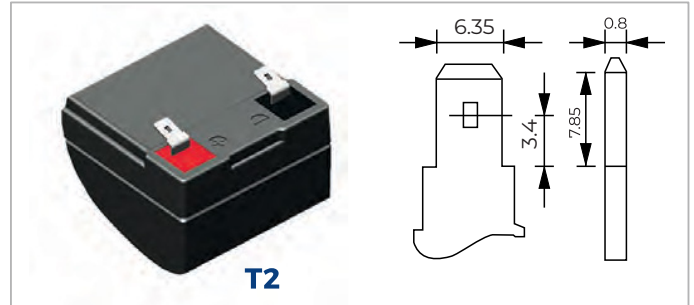
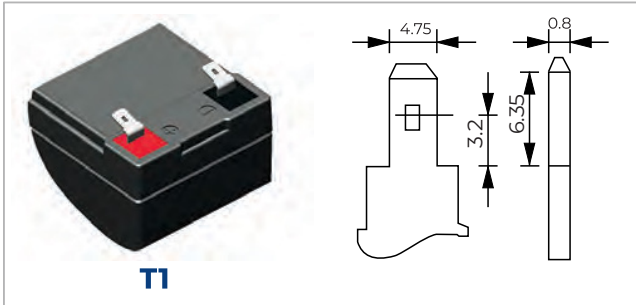
Cycle Life on D.O.D (25°C) - 2V Deep Cycle Series



# Technical Information

## Terminal Type & Position

### Terminal Type & Position



**Flat Terminal**

Type	A (mm)	B (mm)	C (mm)	D (mm)	Material
T3	12	6	12	2	Cu
T4	14	6	14	2	Cu
T5	16	7	17	8	Pb
T6	18	8	18	7	Pb
T7	18	7	20	8	Pb
T8	24	9	24	7	Pb
T9	26	9	25	8	Pb
T10	26	9	21	7	Pb
T21	20	6	18	3	Cu
T22	22	9	23	3	Cu
T25	25	9	23	3	Cu
T64	20	6	16	3	Cu

**Insert Terminal**

Type	A (mm)	B (mm)	C (mm)	Material
T12	12	5	2	Cu
T14	14	6	4	Cu
T16	16	8	5	Cu
T16A	16	6	5	Cu
T18	18	8	5	Cu
T20	20	8	5	Cu

Terminal Type	Torque specificatio N.m
T12	3.0 ± 0.6
T14	5.1 ± 0.6
T16	12.3 ± 2.5
T16A	5.1 ± 0.6
T18	12.3 ± 2.5
T20	12.3 ± 2.5



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