

TES SERIES BATTERY

TES series is special designed for energy cyclic use. It can deliver very long cycle life even under partial state of charge (PSOC). The charge efficiency is also higher than normal lead acid battery. Combined with high vibration resistance & explosion-proof design. The inner unique connection structure can provide the highest reliability for today's energy storage solutions. It is recommended to be used in Wind Power / PV Energy Storage System, Micro - Grid Energy Storage System sand Smart Grid Energy Storage System.

TECHNICAL SPECIFICATIONS

Nominal Voltage (V)	12 (6 cells per unit)
Nominal Capacity (25°C)	150Ah @ C ₁₀ (to 1.80Vpc)
Designed Life (25 °C)	≥2100 cycles@ 70%
Dimensions	L510mm× W225mm × H208mm(212)
Approx. Weight	63.5 kg
Terminal Type	M8 Copper Insert(torque: 12-13N.m)
Internal Resistance	Approx. 1.2 mOhm (fully charged @ 25°C)
Ambient Temperature	Discharge: -40~60°C Charge: -25~60°C Storage: -25~40°C
Self Discharge	Approx. 3% per month @ 20°C
Float Charge Voltage (20~25 °C)	13.5~13.6V (-3mV /°C/cell)
Cyclic Charge Voltage (20~25 °C)	14.3~14.7V
Container Material	ABS(UL94-V0 is optional)

Long Cycle Life
2100 cycles@ 70%DoD

High Wh Efficiency
up to 92% at PSoC state

Long Cycle Life at PSOC
5100 Cycles @30% DOD

12 V
Voltage

150 Ah
10Hr Capacity

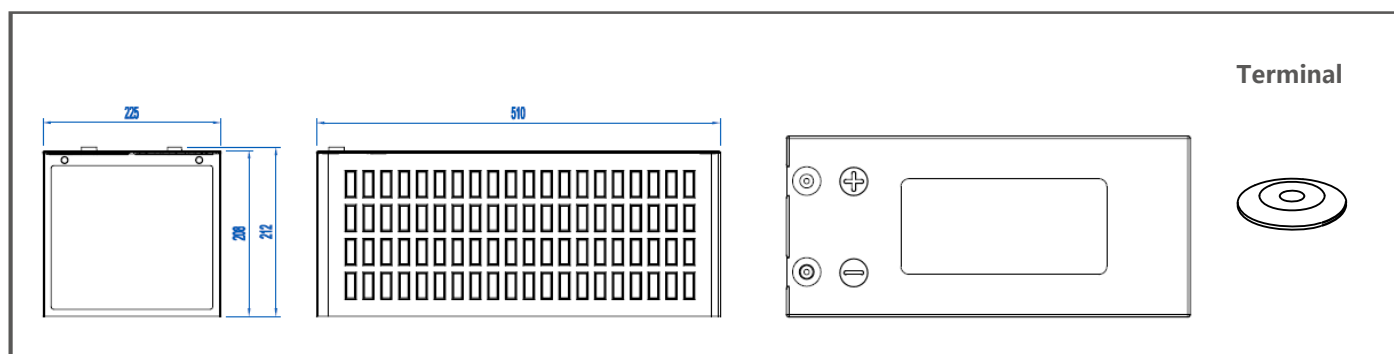
Horizontal Bipolar
Technology



Complied Standards

- GB/T 36280
- IEC 61427
- DL/T 637
- UL1989

BATTERY DIMENSIONS



BATTERY DISCHARGE DATA

Constant Current Discharge Characteristics: Amps (25°C)

F.V/Time	5min	10min	15min	30min	1h	2h	3h	5h	8h	10h	20h
9.60V	832	537	394	222	123	66.2	46.1	29.7	19.3	15.8	8.50
10.0V	781	513	380	216	120	64.8	45.7	29.2	19.1	15.5	8.40
10.2V	760	505	372	211	118	63.7	45.3	28.8	18.9	15.4	8.30
10.5V	729	487	362	206	116	62.6	44.7	28.4	18.6	15.2	8.18
10.8V	696	466	349	202	112	61.0	43.7	27.9	18.3	15.0	8.03
11.1V	636	435	330	194	106	58.2	42.0	26.9	17.7	14.6	7.83

High Charge Efficiency under PSOC
Around 92% Wh Efficiency

High Capacity at Low Temperature
75% Capacity at -18°C

Constant Power Discharge Characteristics: Watts (25°C)

F.V/Time	5min	10min	15min	30min	1h	2h	3h	5h	8h	10h	20h
9.60V	8657	5848	4357	2514	1390	757	534	348	235	189	104
10.0V	8361	5704	4242	2452	1368	745	532	338	233	186	102
10.2V	8237	5620	4152	2398	1340	738	530	332	225	183	100
10.5V	7979	5484	4042	2342	1311	726	527	322	220	180	99.2
10.8V	7797	5268	3942	2284	1276	715	518	313	212	175	98.0
11.1V	7328	5002	3794	2221	1211	690	503	302	205	170	96.0

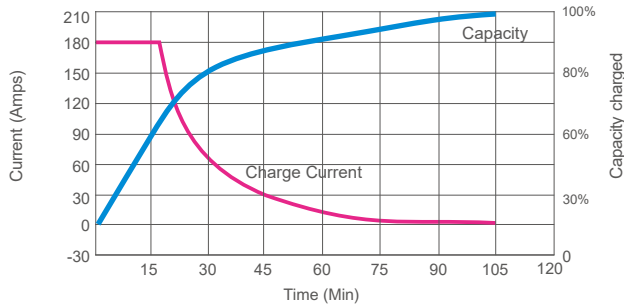
Max. Discharge/Charge
Current up to 10C

Can be fast charge with 2C max.
25min to 80% and 100min to 100%

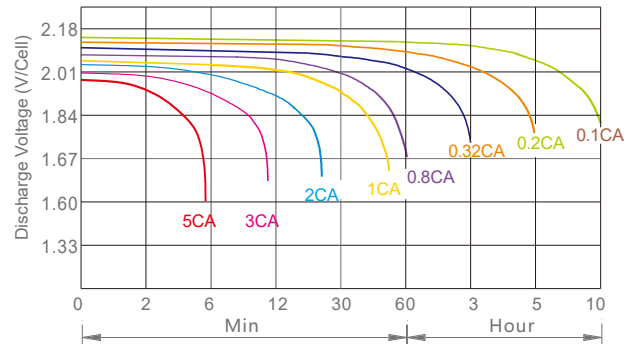
Characteristics

2C Charge Characteristic

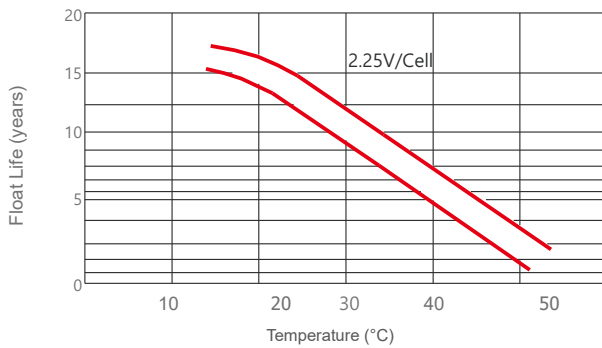
(Charging voltage limit: 14.4V)



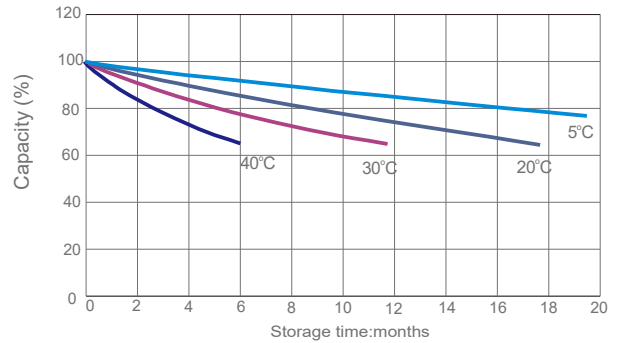
Discharge Characteristic (25°C)



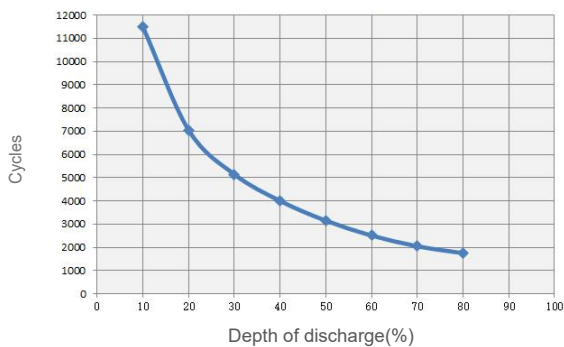
Temperature vs Float Life



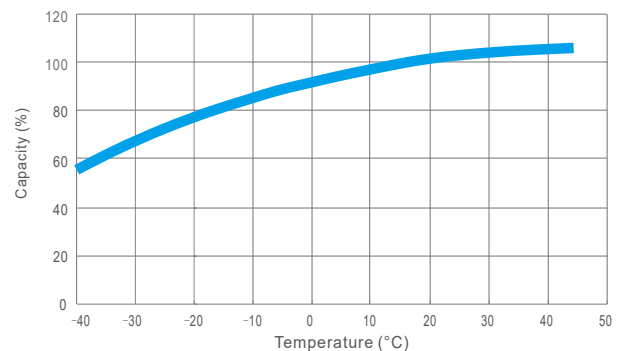
Self Discharge Characteristics



Cycle Life vs DOD%



Capacity vs Temperature



Final Voltage Settings Recommend According to Discharge Current:

Discharge Current I(A)	$I < 0.08C$	$0.08C \leq I < 0.2C$	$0.2C \leq I < 0.6C$	$0.6C \leq I < 1.0C$	$1.0C \leq I < 3.0C$	$I \geq 3.0C$
Final of Voltage	$\geq 1.85V_{pc}$	$\geq 1.80V_{pc}$	$\geq 1.75V_{pc}$	$\geq 1.70V_{pc}$	$\geq 1.60V_{pc}$	$\geq 1.20V_{pc}$

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TES series is special designed for energy cyclic use. It can deliver very long cycle life even under partial state of charge (PSOC). The charge efficiency is also higher than normal lead acid battery. Combined with high vibration resistance & explosion-proof design. The inner unique connection structure can provide the highest reliability for today's energy storage solutions. It is recommended to be used in Wind Power / PV Energy Storage System, Micro - Grid Energy Storage System sand Smart Grid Energy Storage System.

TECHNICAL SPECIFICATIONS

Nominal Voltage (V)	12 (6 cells per unit)
Nominal Capacity (25°C)	200Ah @ C ₁₀ (to 1.80Vpc)
Designed Floating Life (20°C)	15 Years
Dimensions	L646mm× W185mm × H260mm(262)
Approx. Weight	81.5 kg
Terminal Type	M8 Copper Insert(torque: 12-13N.m)
Internal Resistance	Approx . 1.0 mΩ (fully charged @ 25°C)
Ambient Temperature	Discharge: -40~60°C Charge: -25~60°C Storage: -25~40°C
Self Discharge	Approx. 3% per month @ 20°C
Float Charge Voltage (20~25 °C)	13.4~13.5V (-3mV /°C/cell)
Cyclic Charge Voltage (20~25 °C)	14.1~14.2V (-3mV /°C/cell)
Container Material	ABS(UL94-V0 is optional)

Long Cycle Life
2000 cycles@ 70%DoD

High Wh Efficiency
up to 92% at PSoC state

Long Cycle Life at PSOC
5200 Cycles @30% DOD

12 V
Voltage

200 Ah
10Hr Capacity

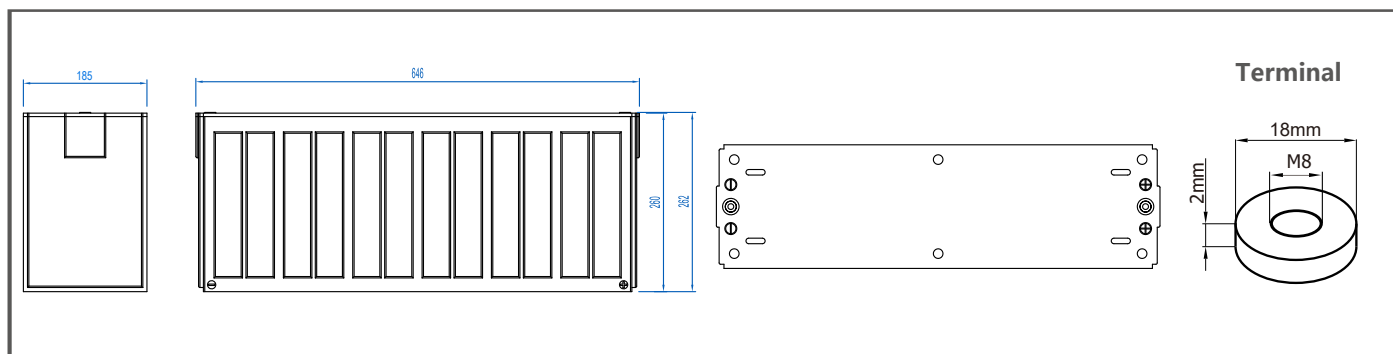
Horizontal Bipolar
Technology



Complied Standards

- IEC 60896-21/22
- IEC 61427
- Eurobat guide, long life
- BS6290 part 4
- UL1989

BATTERY DIMENSIONS



BATTERY DISCHARGE DATA

Constant Current Discharge Characteristics: Amps (25°C)

F.V/Time	5min	10min	15min	30min	1h	2h	3h	5h	8h	10h	20h
9.60V	1110	716	525	297	157	88.1	61.7	39.7	26.2	21.0	11.3
10.0V	1041	684	506	288	152	85.7	60.9	39.0	25.7	20.6	11.1
10.2V	1014	674	492	282	151	84.1	60.5	38.4	25.3	20.4	11.0
10.5V	972	654	480	276	148	82.5	60.0	38.1	24.9	20.2	10.9
10.8V	944	625	466	271	143	79.2	58.6	37.6	24.4	20.0	10.7
11.1V	882	581	438	259	134	76.6	56.4	35.9	23.6	19.3	10.5

High Charge Efficiency under PSOC
Around 92% Wh Efficiency

High Capacity at Low Temperature
75% Capacity at -18°C

Constant Power Discharge Characteristics: Watts (25°C)

F.V/Time	5min	10min	15min	30min	1h	2h	3h	5h	8h	10h	20h
9.60V	11543	7797	5809	3352	1778	1009	712	465	314	253	138
10.0V	11175	7739	5683	3310	1752	996	710	458	310	248	136
10.2V	11063	7534	5586	3274	1737	986	707	453	303	246	134
10.5V	10747	7366	5467	3237	1702	972	702	447	299	243	133
10.8V	10556	7147	5361	3192	1656	958	690	442	291	239	131
11.1V	9997	6696	5085	3028	1580	920	671	428	283	232	128

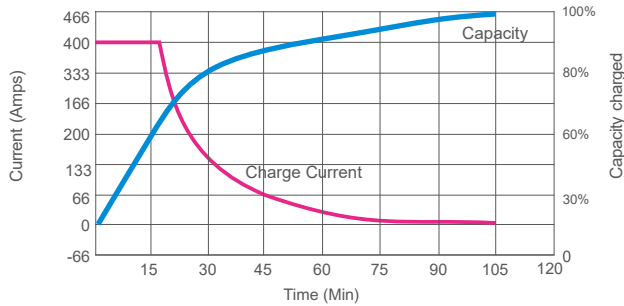
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Current up to 10C

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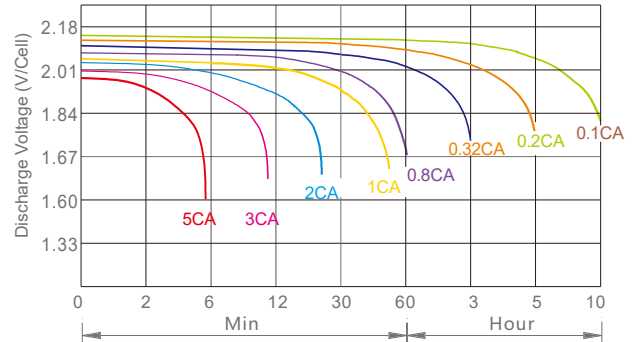
Characteristics

2C Charge Characteristic

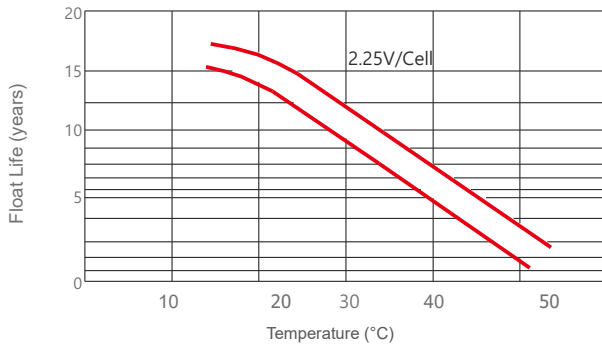
(Charging voltage limit: 14.4V)



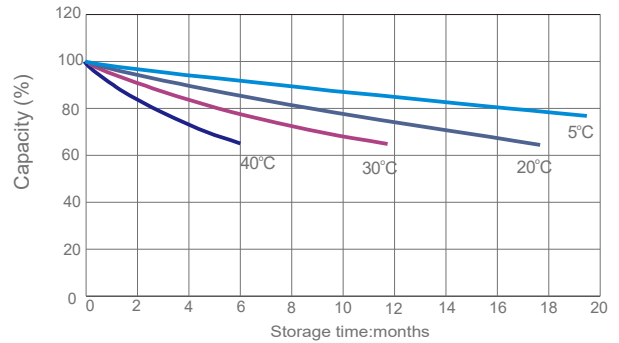
Discharge Characteristic (25°C)



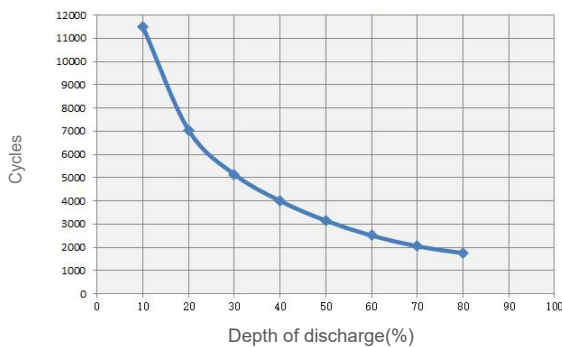
Temperature vs Float Life



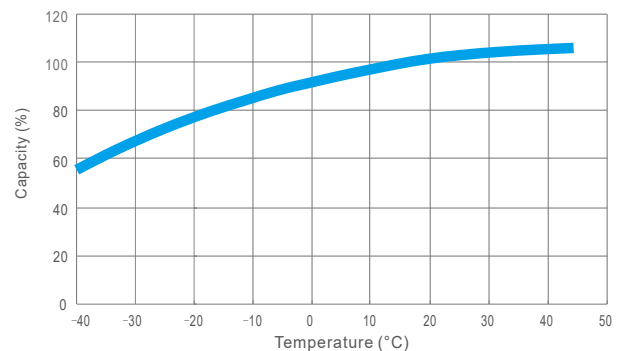
Self Discharge Characteristics



Cycle Life vs DOD%



Capacity vs Temperature



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Final of Voltage	$\geq 1.85V_{pc}$	$\geq 1.80V_{pc}$	$\geq 1.75V_{pc}$	$\geq 1.70V_{pc}$	$\geq 1.60V_{pc}$	$\geq 1.20V_{pc}$