ES
series

Pasted High Technology
Electrolyte **S**uspension lead-acid Battery

GLOBAL

Unlimited Power
ROCKET
BATTERY

Head Office

Chang-Won Factory

Industrial battery & Motive Power, EV(Electric Vehicle)
- Capacity : 1.5 Million/year
- Gross Area : 28,000 m²

Gwang-Ju Factory

Automotive battery
- Capacity : 14 Million/year
- Gross Area : 22,000 m²

R&D Center

History

Sep.	1952	Founded as R&D center of the Korea Navy
Jan.	1965	KS certified as the first in Korean battery industry
Jan.	1965	Secured technical tie-up with YUASA Battery in Japan
Apr.	1975	Capital invested from YUASA Battery in Japan
Nov.	1983	KS certified for entire line of products
Jul.	1988	Secured technical tie-up with HAGEN in Germany
Nov.	1989	Opened KwangJu plant for automotive battery
Oct.	1992	Secured technical tie-up with SAFT in France
Jan.	1993	ISO 9002 certified as the first in Asian battery industry
Apr.	1994	ChangWon plant and KwangJu plant ISO 9001 certified by DNV QA
Nov.	1994	Opened the 2nd KwangJu plant
Oct.	1997	KwangJu plant QS 9000 certified by DNV QA
Nov.	2000	KwangJu plant ISO 14001 certified by DNV QA
Dec.	2003	KwangJu Plant ISO/TS 16949 certified by KFQ
Sep.	2005	Changed the New Company name from GLOBAL & YUASA Co., Ltd. to SEBANG GLOBAL Battery Co., Ltd.
Aug.	2007	Awarded the new technology certification of nickel hydride battery (NET)
Mar.	2008	Achieved the environment mark certification of nickel hydride battery.
Aug.	2008	Granted the KS certification of nickel hydride battery

Prizes

- Received the "Leading Export Company Award"
- Given the Export Award for recording $50 million in Export Sales
- Selected as one of Korea's best 100 quality management companies
- Received the Iron Tower Award for Quality Management
- Received the Korea Customs Service Commissioner's Award on Tax Day
- Recognized as one of the top companies by the Ministry of Labor for excellent management-labor relations
- Recognized by the Ministry of Commerce, Industry and Energy for superior quality
- Received the Engineering Award from the Ministry of Science and Technology
- Received the President's Award at the Korean Quality Management Conference
- Technological Innovation Award for GMH
- Recognized for having the number one brand power in the battery industry

ISO 9001

TS 16949

KS certificate

JIS certificate

ISO 14001

KEPIC

UL certificate

TSE certificate

Carbon put print labeling certificate

ES series

Pasted High Technology Electrolyte Suspension lead-acid AGM Battery

Applications

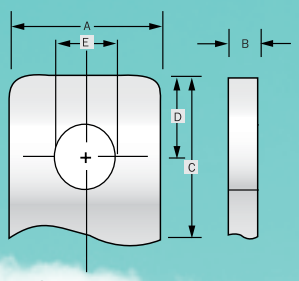
Cycle Use

- Various Portable Equipment
- Medical Instruments
- Cameras & Photographic
- Equipment
- Portable Digital Instruments
- Personal Computers
- Powered Toys
- Renewable Energy System(Solar & Wind Power)
- Lighting Equipment

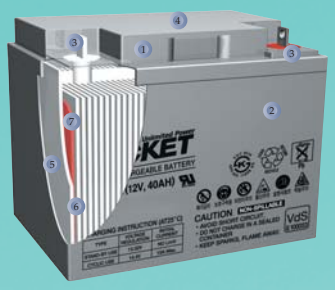
Standby Use

- Security Alarm Systems
- Fire Alarm Systems
- Computer Back-up
- Emergency Lighting
- UPS Systems
- Communication Equipment
- OA/FA/HA Equipment

Terminal



1. Cover
2. Container
3. Terminal
4. Safety Valve
5. Negative Plate
6. Positive Plate
7. Separator(AGM)



BOLT TERMINAL(mm) & TIGHTENING TORQUE

Type	A	B	C	D	E	Bolt type	Tightening Torque(kgf.cm)
ESH 30-12	12	2	11.5	5.5	5.5	M5	20~30
ES(H,L) 40-12	15	5	17.5	7.5	5.5		
ES(H,L) 65-12	18	6	20.5	9.5	6.8	M6	40~55
ES 80H-12 ES 100H-12	25.5	8	28.5	13	10.5	M10	150~200
ES(H,L) 100-12 ES(H,L) 130-12 ES(H,L) 150-12 ES(H,L) 200-12	27.4	10	34	15	11		

Product Characteristics

- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

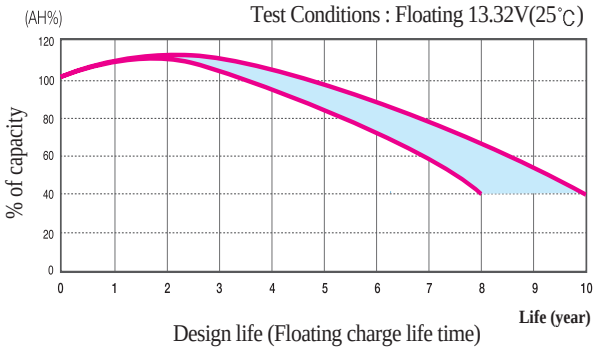
Certificate

MH15934

- ISO 9001
- ISO 14001
- TSE(TURKEY STANDARD)

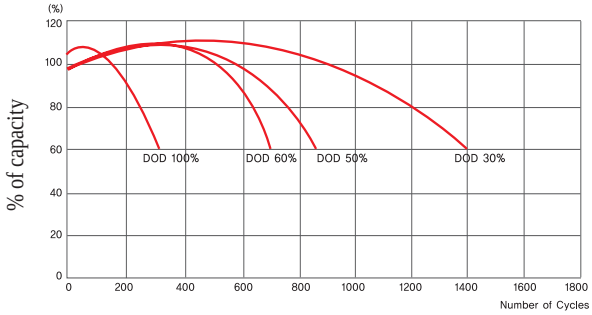
ESH

■ Design Life



Design life (Floating charge life time)

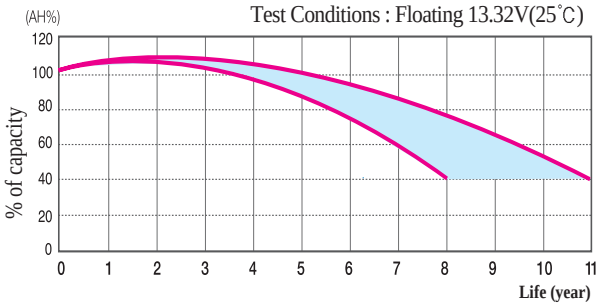
■ Cycle Lifetime by DOD



Number of Cycles vs. Depth of Discharge (DOD)

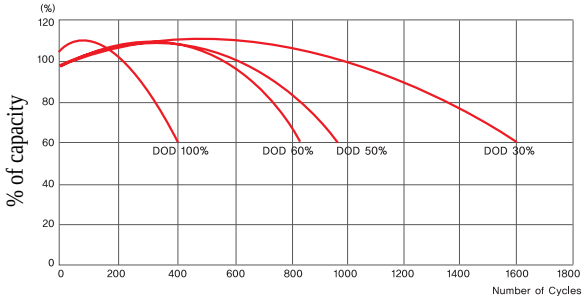
ESL
ES Long - Life

■ Design Life



Design life (Floating charge life time)

■ Cycle Lifetime by DOD



Number of Cycles vs. Depth of Discharge (DOD)

ESH SPECIFICATION

Type	Nominal Voltage (V)	Capacity (AH)					Dimension (mm)				Weight (kg)	Terminal type
		10HR 1.80 (V/Cell)	5HR 1.70 (V/Cell)	3HR 1.67 (V/Cell)	1HR 1.60 (V/Cell)	0.5HR 1.60 (V/Cell)	Length (L) (±)2	Width (W) (±)2	Height (H) (±)3	Total Height (TH) (±)5		
ESH 30-12	12	30	25.5	23.1	18	15.0	192	132	170	170	9.3	BOLT TERMINAL
ESH 40-12	12	40	34.0	30.8	24	20.0	197	165	170	170	12.8	
ESH 65-12	12	65	55.3	50.1	39	32.5	325	166	174	174	20.9	
ES 80H-12	12	80	68.0	61.5	48	37.5	332	174	229	229	24.7	
ES 100H-12	12	100	85.0	77.1	60	46.5	332	174	229	229	28.7	
ESH 100-12	12	100	92.0	83.0	65	50.0	443	167	204	237	32.0	
ESH 130-12	12	130	119.0	108.0	85	65.0	550	167	204	237	40.0	
ESH 150-12	12	150	137.0	124.0	98	75.0	520	269	203	237	50.0	
ESH 200-12	12	200	183.0	166.0	130	100.0	520	269	203	237	60.0	

*Above specifications subject to change without prior notice

ESL SPECIFICATION

Type	Nominal Voltage (V)	Capacity (AH)					Dimension (mm)				Weight (kg)	Terminal type
		10HR 1.80 (V/Cell)	5HR 1.70 (V/Cell)	3HR 1.67 (V/Cell)	1HR 1.60 (V/Cell)	0.5HR 1.60 (V/Cell)	Length (L) (±)2	Width (W) (±)2	Height (H) (±)3	Total Height (TH)(±)5		
ESL 40-12	12	40	34.0	30.8	24	20.0	197	165	170	170	13.4	BOLT TERMINAL
ESL 65-12	12	65	55.3	50.1	39	32.5	325	166	174	174	21.2	
ESL 100-12	12	100	92.0	83.0	65	50.0	443	167	204	237	34.5	
ESL 130-12	12	130	119.0	108.0	85	65.0	550	167	204	237	43.0	
ESL 150-12	12	150	137.0	124.0	98	75.0	520	269	203	237	52.9	
ESL 200-12	12	200	183.0	166.0	130	100.0	520	269	203	237	64.5	

*Above specifications subject to change without prior notice

PERFORMANCE DATA

Battery Capacity Selection

Figure 1 below may be used to determine the minimum battery capacity requirement in Ampere Hour(AH). To determine the capacity required, specify the discharge current and the length of time required for discharge. Select the specified current and time on the chart. The point where the current and time lines intersect on the chart with the diagonal AH line is the minimum capacity required for the application.

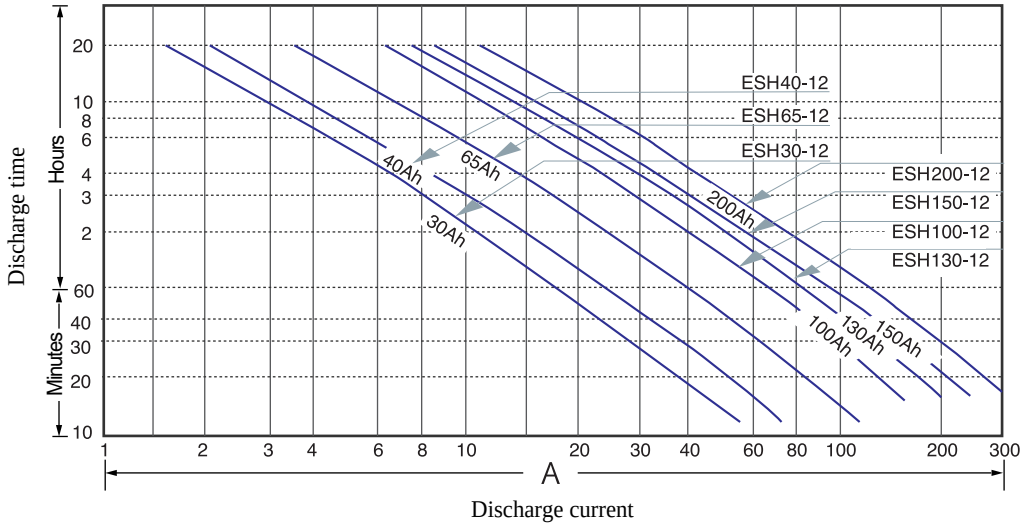


Figure 1. 10-Hour Rate Capacity Selection Chart

Discharge Characteristics Diagram

The curves shown in Figure 2 illustrate the typical ESH battery discharge features at an ambient temperature of 25℃ (77°F). The symbol 'C' expresses the nominal capacity of the battery measured at a 10-hour discharge rate.

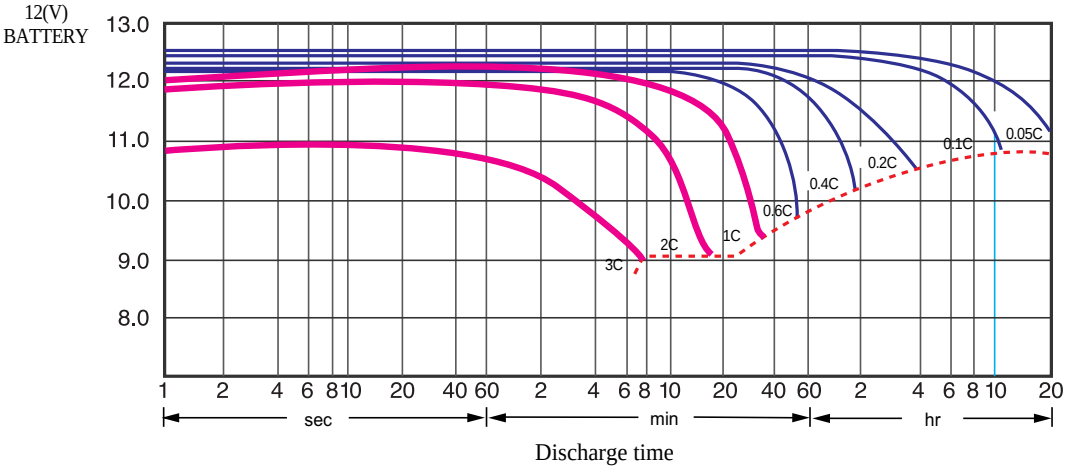


Figure 2. Discharge characteristics diagram at 25℃(77° F)

Charge Characteristics

1. New batteries can be used without charging, however batteries put into service long after the manufacturing date may need to be charged.
2. During charging, the ambient temperature should be in the 0~40℃ range. If the surface temperature exceeds 50℃ charging should stop and resume when the temperature drops below 40℃
3. Observe polarity when connecting.
4. There are two charge methods depending on usage conditions.

25℃

Using Type	Charging Voltage(V)	Compensation Voltage(mv/℃)	Max. initialCharging	Charge Time		Recommended Temp.℃
				After 100% Discharge	After 50% Discharge	
Floating Use	12V Battery 13.32	-18	0.25	24	20	15~35℃
Cycle Use	12V Battery 14.40	-24	0.25	16	10	

Temperature and Floating Charge Characteristics

Floating charge voltage set-up depending on temperature

※Floating charge voltage: 13.32V(25℃)

※If the ambient temperature is too high, this may cause deterioration in battery performance, damage or deformation. The charge voltage should therefore be lowered in order to prevent over charging.

Floating charge voltage (V) = Optimal floating charge voltage(V) × No. of blocks

Temperature	-10℃	0℃	10℃	20℃	25℃	30℃	35℃	40℃
Floating use (V)	13.9V	13.77V	13.59V	13.41V	13.32V	13.23V	13.14V	13.05V
Cycle use (V)	14.51V	14.48V	14.45V	14.42V	14.40V	14.39V	14.37V	14.36V

When the ambient temperature is higher than 25℃(77°F), the float charge voltage would be adjusted according to the temperature compensation formula listed above.

Temperature Characteristics

The diffusion rate of electrolytes, reaction rate of active materials in the plates and the discharge capacity are affected in direct proportion to the ambient temperature.

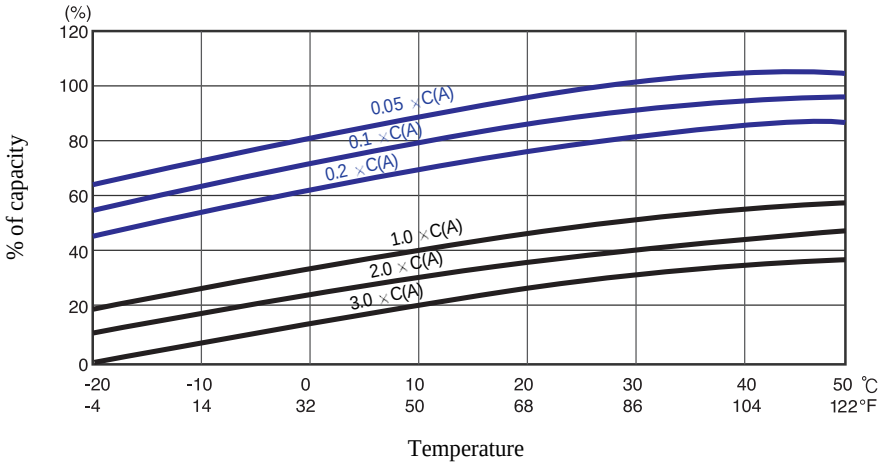


Figure 3. Relation between temperature and discharge capacity

Self-dischrge Characteristics Diagram

The self-discharge rate of ES batteries is approximately 2.5% per month when batteries are stored at an ambient temperature of 25℃ (77°F). The self-discharge rate varies with ambient temperature. Figure 4 shows the relation between the storage time at various temperatures and the remaining capacity.

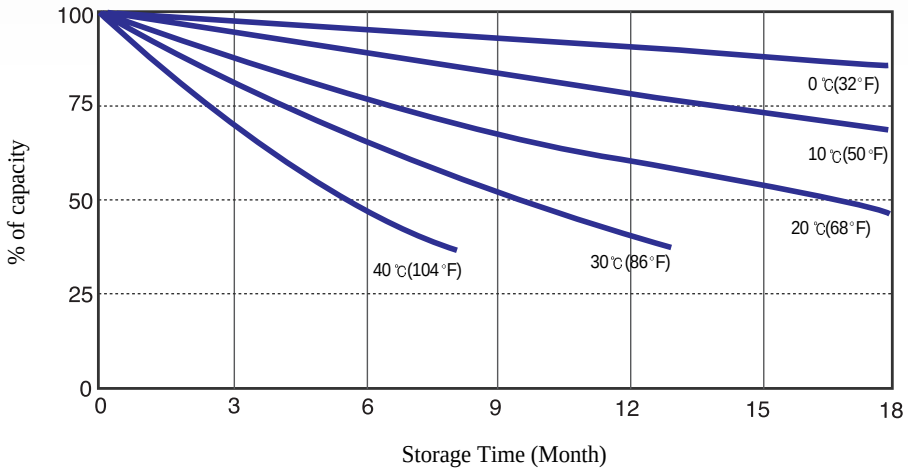


Figure 4. Self-discharge characteristics diagram

Design Life

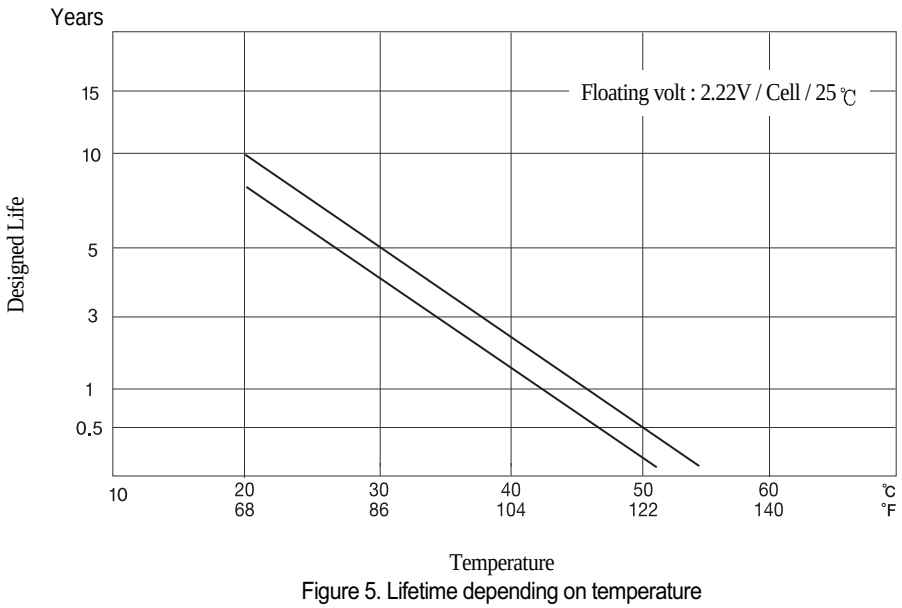


Figure 5. Lifetime depending on temperature

ES series

Discharge Table in Amperes

Amperes to F.V 1.80V /Cell at 25℃

Type	Minutes				Hours						
	5	15	30	45	1	2	3	5	8	10	20
ESH 30	75.2	42.3	28.8	21.0	17.2	10.4	7.3	4.8	3.3	3.0	1.5
ES(H,L) 40	100	56.5	38.4	28.0	22.9	13.8	9.8	6.5	4.4	4.0	2.1
ES(H,L) 65	163	91.9	62.4	45.6	37.2	22.4	16.1	10.5	7.1	6.5	3.4
ES 80H	193	109	74.8	54.1	44.0	26.6	19.1	12.5	8.4	8.0	4.1
ES(H,L) 100	250	141	96.1	70.1	57.2	34.5	24.7	16.2	10.9	10.0	5.4
ES(H,L) 130	325	184	125	91.1	74.3	44.8	32.1	21.0	14.1	13.0	7.0
ES(H,L) 150	375	212	144	105	85.7	51.7	37.1	24.2	16.4	15.0	8.1
ES(H,L) 200	500	283	192	140	114	69.0	49.4	32.3	21.7	20.0	10.7

Discharge Table in Amperes

Amperes to F.V 1.70V /Cell at 25℃

Type	Minutes				Hours						
	5	15	30	45	1	2	3	5	8	10	20
ESH 30	84.6	48.0	29.8	22.2	17.5	11.0	7.5	5.0	3.4	3.1	1.6
ES(H,L) 40	113	63.9	39.7	29.6	23.5	14.6	10.0	6.8	4.5	4.1	2.2
ES(H,L) 65	183	104	64.6	48.4	38.0	23.8	16.6	11.1	7.5	6.6	3.5
ES 80H	217	124	78.0	57.4	47.3	28.3	20.0	13.6	8.9	8.1	4.2
ES(H,L) 100	281	160	98.0	74.4	61.5	36.7	27.0	18.4	11.5	10.2	5.5
ES(H,L) 130	366	208	129	96.8	80.0	47.7	34.7	23.8	14.9	13.2	7.1
ES(H,L) 150	422	240	149	112	92.3	55.0	40.1	27.6	17.3	15.3	8.2
ES(H,L) 200	562	320	199	149	123	73.3	53.4	36.6	23.0	20.4	10.8

Discharge Table in Amperes

Amperes to F.V 1.60V /Cell at 25 ℃

Type	Minutes				Hours						
	5	15	30	45	1	2	3	5	8	10	20
ESH 30	98.6	52.3	30.0	23.1	18.0	11.4	8.4	5.5	3.8	3.2	1.7
ES(H,L) 40	131	69.8	40.0	30.8	24.0	15.3	11.2	7.3	5.2	4.2	2.3
ES(H,L) 65	213	113	65.0	49.7	39.0	24.6	18.1	11.8	8.3	6.7	3.6
ES 80H	253	134	75.0	59.1	48.0	29.3	21.5	14.1	9.8	8.2	4.3
ES(H,L) 100	328	174	100	76.5	65.0	37.9	28.3	18.6	12.7	10.4	5.6
ES(H,L) 130	426	226	130	99.4	85.0	49.3	36.2	24.0	16.6	13.4	7.2
ES(H,L) 150	492	261	150	115	98.0	56.9	41.7	28.0	19.1	15.6	8.4
ES(H,L) 200	656	348	200	153	130	75.9	55.7	37.0	25.5	20.6	11.0

■ **VRLA** (Valve Regulated Lead Acid Battery)
ESH 30 (12V, 30AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

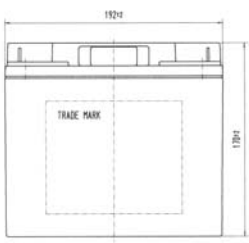
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

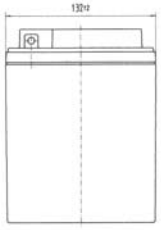
▶ Specifications

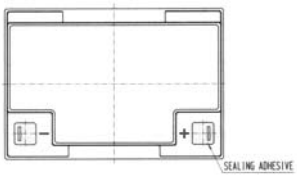
Nominal Capacity (AH)		· 30
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 192*132*170*170
Weight (kg)		· 9.3
ESH Design life (at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 9.0
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	75.2	42.3	28.8	21.0	17.2	10.4	7.3	4.8	3.3	3.0	1.57	0.34
1.7V / Cell	84.6	48.0	29.8	22.2	17.5	11.0	7.5	5.1	3.4	3.1	1.6	0.37
1.6V / Cell	98.6	52.3	30.0	23.1	18.0	11.4	8.4	5.5	3.8	3.2	1.7	0.39







■ VRLA (Valve Regulated Lead Acid Battery)
ES(H,L) 40 (12V, 40AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

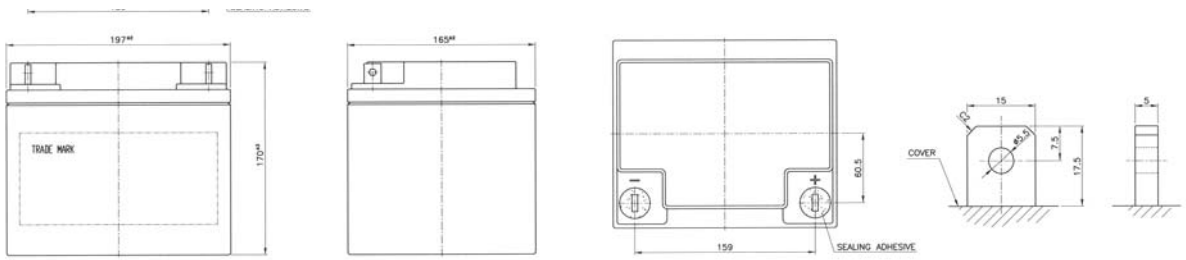
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 40
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 197*165*170*170
Weight (kg)		· 12.8
ESH (Design life at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 10.5
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	100	56.5	38.4	28.0	22.9	13.8	9.8	6.5	4.4	4.0	2.1	0.46
1.7V / Cell	113	63.9	39.7	29.6	23.5	14.6	10.0	6.8	4.5	4.1	2.2	0.48
1.6V / Cell	131	69.8	40.0	30.8	24.0	15.3	11.2	7.3	5.2	4.2	2.3	0.50



■ VRLA (Valve Regulated Lead Acid Battery)
ES(H,L) 65 (12V, 65AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

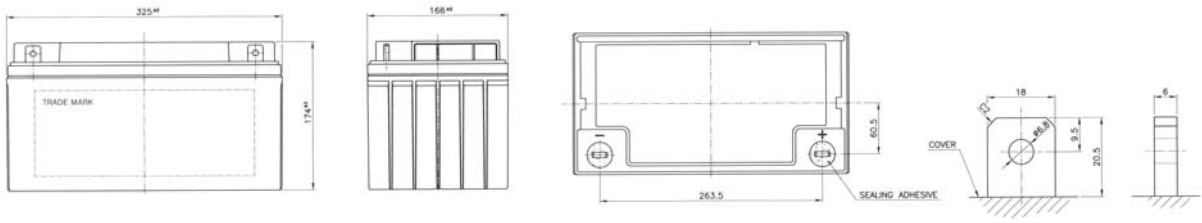
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 65
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 325*166*174*174
Weight (kg)		· 20.9
ESH (Design life at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 7.0
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	163	91.9	62.4	45.6	37.2	22.4	16.1	10.5	7.1	6.5	3.4	0.74
1.7V / Cell	183	104	64.6	48.4	40.0	23.8	16.6	11.06	7.5	6.6	3.5	0.78
1.6V / Cell	213	113	65.0	49.7	39.0	24.6	18.1	11.8	8.3	6.7	3.6	0.80



■ VRLA (Valve Regulated Lead Acid Battery)
ES 80H (12V, 80AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

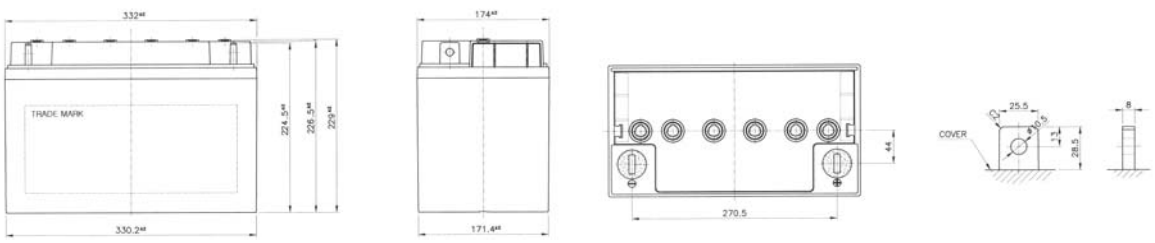
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 80
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 332*174*229*229
Weight (kg)		· 24.7
ESH (Design life at 25 ℃)		· 8~10 years
Internal Resistance (mΩ)		· 5.7
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25 ℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25 ℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	193	109	74.2	54.1	44.0	26.6	19.1	12.5	8.4	8.0	4.1	0.88
1.7V / Cell	217	124	76.8	57.4	47.3	28.3	20.0	13.6	8.9	8.1	4.2	0.89
1.6V / Cell	253	134	75.0	59.1	48.0	29.3	21.5	14.1	9.8	8.2	4.3	0.90



■ **VRLA** (Valve Regulated Lead Acid Battery)
ES 100H (12V, 100AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

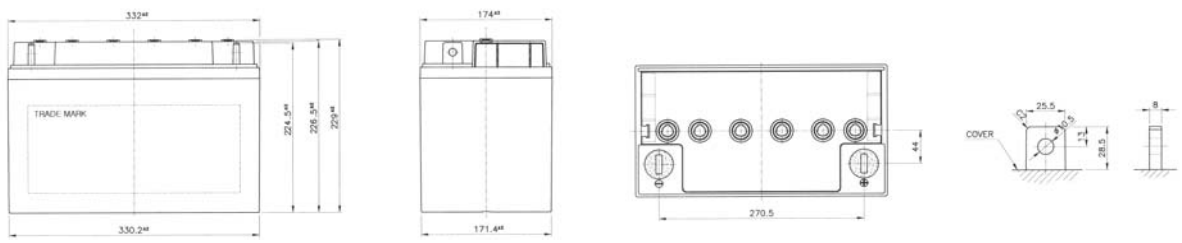
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 100
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 332*174*229*229
Weight (kg)		· 28.7
ESH (Design life at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 5.2
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	237.5	134.0	91.3	66.6	54.3	32.8	23.5	15.4	10.4	10.0	5.1	1.1
1.7V / Cell	267	152	93.1	70.7	58.4	34.9	25.7	17.5	10.9	10.2	5.2	1.1
1.6V / Cell	311.6	165.3	95.0	72.7	61.8	36.0	26.9	17.7	12.1	10.4	5.3	1.2



■ VRLA (Valve Regulated Lead Acid Battery)
ESH 100 (12V, 100AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

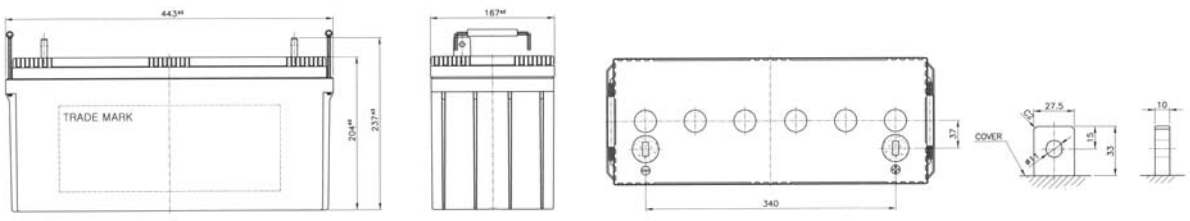
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 100
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 443*167*204*237
Weight (kg)		· 32.0
ESH (Design life at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 5.0
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	250	141	96.1	70.1	57.2	34.5	24.7	16.2	10.9	10.0	5.4	1.15
1.7V / Cell	281	160	98.0	74.4	61.5	36.7	27.0	18.4	11.5	10.2	5.5	1.20
1.6V / Cell	328	174	100	76.5	65.0	37.9	28.3	18.6	12.7	10.4	5.6	1.25



■ **VRLA** (Valve Regulated Lead Acid Battery)
ES(H,L) 130 (12V, 130AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

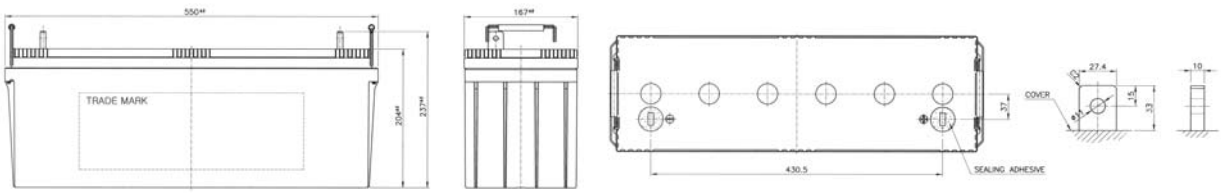
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 130
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 550*167*204*237
Weight (kg)		· 40.0
ESH (Design life at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 3.7
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	325	184	125	91.1	74.3	44.8	32.1	21.0	14.1	13.0	7.0	1.40
1.7V / Cell	366	208	129	96.8	80.0	47.7	34.7	22.8	14.9	13.2	7.1	1.56
1.6V / Cell	426	226	130	99.4	85.0	49.3	36.2	24.0	16.6	13.4	7.2	1.62



■ VRLA (Valve Regulated Lead Acid Battery)
ES(H,L) 150 (12V, 150AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

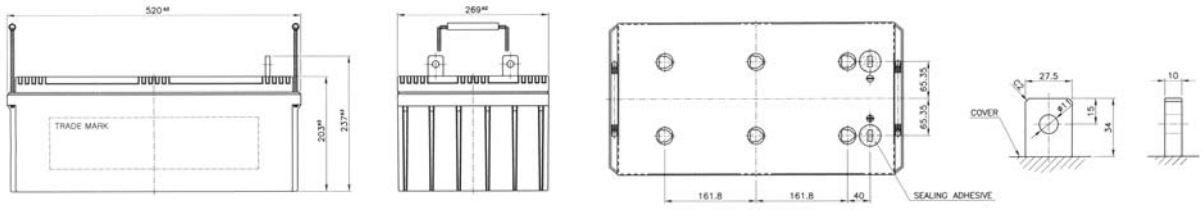
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 150
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 520*269*203*237
Weight (kg)		· 50.0
ESH (Design life at 25 ℃)		· 8~10 years
Internal Resistance (mΩ)		· 3.5
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25 ℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25 ℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	375	212	144	105	85.7	51.7	37.1	24.2	16.4	15.0	8.1	1.62
1.7V / Cell	422	240	149	112	92.3	55.0	40.1	27.4	17.3	15.3	8.2	1.80
1.6V / Cell	492	261	150	115	98.0	56.9	41.7	28.0	19.1	15.6	8.4	1.87



■ **VRLA** (Valve Regulated Lead Acid Battery)
ES(H,L) 200 (12V, 200AH/10hr)

▶ Applications

Cycle use
Various Portable Equipment / Medical Instruments /
Cameras & Photographic / Equipment /
Portable Digital Instruments / Personal Computers /
Powered Toys / Lighting Equipment
Renewable Energy System(Solar & Wind Power)

Standby use
Security Alarm Systems / Fire Alarm Systems /
Computer Back-up / Emergency Lighting /
UPS Systems / Communication Equipment

▶ Technical Features

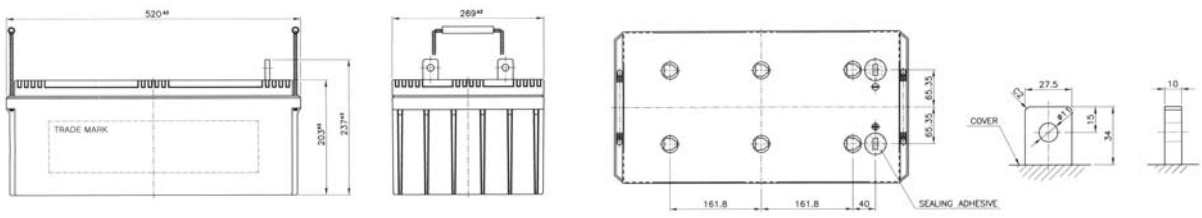
- No-Spill Sealed Construction
- Absorptive Glass Mat System (AGM System)
- Container & Cover : Acid-resistant ABS resin
  Option : UL94-V0 = ABS
- Gas Recombination
- Maintenance-Free Operation
- Low Pressure Venting System
- Heavy-Duty Grids
- Low Self-Discharge / Long Shelf Life
- Wide Operating Temperature Range
- High Recovery Capacity
- Design life 8~10 years at 25℃

▶ Specifications

Nominal Capacity (AH)		· 200
Nominal Voltage (V)		· 12
Dimensions (L*W*H*TH) (mm)		· 520*269*203*237
Weight (kg)		· 60.0
ESH (Design life at 25℃)		· 8~10 years
Internal Resistance (mΩ)		· 3.4
ESL Cycle Life (DOD100/50/30%)		· 400 / 950 / 1600 Cycle
Self Discharge (at 25℃)		· 2.5% / Month
Operating Temperature Range (℃)		· -15 ~ +50
Charge voltage (at 25℃)	Cyclic use (V)	· 14.40
	Standby use (V)	· 13.32

▶ Discharge Table in Amperes

Final Voltage	5min	15min	30min	45min	1h	2h	3h	5h	8h	10h	20h	100h
1.8V / Cell	500	283	192	140	114	69.0	49.4	32.3	21.7	20.0	10.7	2.16
1.7V / Cell	562	320	199	149	123	73.3	53.4	36.6	23.0	20.4	10.8	2.40
1.6V / Cell	656	348	200	153	130	75.9	55.7	37.0	25.5	20.6	11.0	2.50



Danger

- The battery's operating environment should be well-ventilated to ensure that the concentration of hydrogen in the air is under 2%. The storage battery may emit small amounts of hydrogen gas which could ignite due to fire or short circuit if pemitted to accumulate.
- Do not short-circuit the storage battery positive and negative terminals. This could result in battery leakage, fire or explosion.
- Do not install the battery in an enclosed space or near sources heat. This could result in explosion or fire.
- Do not attach wires or other metals to the positive or negative terminals of the storage battery. Avoid placing torque wrenches, or other metal tools on top of the storage battery. This can result in leakage, heat generation, explosion, or burns due to short circuiting. It is recommended that metal tools such as torque wrenches and spanners be covered with vinyl electrical tape for insulation.
- The storage battery contains dilute sulfuric acid which serves as an electrolyte. Sulfuric acid is dangerous and can cause serious burns and blindness. Please avoid contact with the skin. In the case of skin exposure, immediately flush the area with large amounts of water. In the case of eye exposure, flush the eyes with tap water or clean water and immediately seek medical attention.
- Use a wet cloth to clean the storage battery. A dry cloth can cause static electricity through friction, posing a risk of explosion.
- When installing the storage battery in a device, make sure that the devic is not completely closed or sealed. Use of the storage battery in a closed device could pose a risk of fire, explosion and damage to the device.

Warning

- Do not attempt to disassemble, modify or break open the storage battery. This could result in leakage, fire, explosion or other consequences.
- Please replace the battery according to the service cycle listed in the instruction manual or listed on devices. Exceeding the recommended replacement date can result in leakage, fire, explosion or other consequences.
- When placing storage batteries in an array, please make sure that the positive and negative polarity is consistent. Connection of opposite polarities can result in fire or damage to battery charging equipment.
- Do not use storage batteries in an environment close to heat sources. This could result in leakage, fire, explosion or other consequences.
- Immediately cease use of the storage battery if corrosion, leakage, or deformation of the terminals is apparent. Operation of the battery in such conditions can result in leakage, fire, explosion or other consequences.

Caution

- The storage battery does not generate heat. Heat is a sign of overcharging and could also cause the battery charger to malfunction.
- Please do not store the battery next to transformers or other hot areas such as the interior of a car, areas with direct exposure to strong sunlight, or near fire. Excessively high temperatures can result in leakage, fire, explosion or other consequences.
- The storage batteries should only be charged with specified chargers recommended by the manufacturer. Charging the battery with unapproved devices could result in leakage, heat generation, explosion or shortening of the battery's service life.
- Do not install the storage battery in areas prone to flooding. Contact with water could result in electrocution or fire.
- The storage battery operating temperature range is -15 to 50 degrees Celsius, but the most appropriate temperature is 20 to 25 degrees Celsius. Performance and service life may decrease when the battery is operated outside of the ideal temperature range resulting in decreased service life, damage to the product or warping.
- Batteries which have completed their service life should be disposed of by an authorized waste management firm.

  Please contact the manufacturer for list of firms handling battery disposal.
- The maximum discharge voltage listed on the storage battery spec sheet should not be exceeded. This charge in excess of the maximum discharge current could result in leakage, heat generation, explosion or other consequences.
- The storage battery should not be operated in environments with excessive dust or particulate pollution. These environments can cause short circuits.
- Do not clean the storage battery with water or brine. This could result in damage to the storage battery or fire in addition to corrosion of the connector plate and terminals.

SEBANG
SEBANG GLOBAL BATTERY

www.gbattery.com

We are developing from world-moving batteries to seize a future of advanced energy.
We are sustaining our charge of high credibility far into the future.
Sebang battery Charged with credibility - Powered by Enterprise.

Unlimited Power
ROCKET
BATTERY

SEBANG

SEBANG GLOBAL BATTERY

Address :
827-6, Gwanyang-Dong, Dongan-Gu, Anyang-Si, Gyeonggi-Do, 431-060 Korea.
Phone : 82-31-436-3361 / Fax : 82-31-436-3351