



PT. SELATAN JADI JAYA

FACTORY :
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FORCE SERIES VRLA (12V200 AH)



Product Specification

Nominal Voltage	12V
Nominal Capacity (20HR)	200 AH
Dimensions	Length 525±1mm (20.66 inches)
	Width 240±1mm (9.44 inches)
	Container Height 220±1mm (8.66 inches)
	Total Height (with terminal) 236±1mm (9.29 inches)
	Approx Weight 59.5 kg (131.17 lbs)
Terminal	F9 Terminal
Container & Cover Material	ABS Copolymer (UL-94 HB)
Lead Material	Purity Lead 99.995%
Sulfuric Acid	Distilled Sulfuric Acid (Zero metal content)
Separator	AGM
Rated Capacity	200 AH/10A (20hr, 1.75V/cell,25°C/77°F)
	186AH/18.6A (10hr, 1.75V/cell,25°C/77°F)
	170AH/34A (5hr, 1.70V/cell,25°C/77°F)
	151.50AH/50.51A (3hr, 1.70V/cell,25°C/77°F)
	123.04 AH/123.04 (1hr, 1.60V/cell,25°C/77°F)
Max. Discharge Current	2000A (5s)
Internal Resistance	Approx 2.7 mΩ
Operating Temp. Range	Discharge : -15~50°C (5~122°F)
	Charge : 0~40°C (32~104°F)
	Storage : -15~40°C (5~104°F)
Nominal Operating Temp. Range	25±3°C (77±5°F)
Cycle Use	Initial Charging Current less than 60.0A Voltage 14.5V~14.9V at 25°C (77°F) Temp.Coefficient -30mV/°C
	No limit on Initial Charging Current Voltage 13.5V~13.8V at 25°C (77°F) Temp.Coefficient -20mV/°C
Standby Use	40°C (104°F) 103%
	25°C (77°F) 100%
	0°C (32°F) 86%
Self Discharge	Force series batteries may be stored for up to 6 months at 25°C(77°F) and then a freshening charge is required. For higher temperatures the time interval will be shorter.

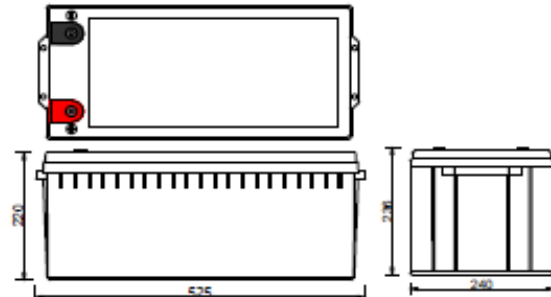
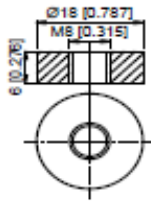
Applications

- All purpose
- Uninterruptible Power Supply (UPS)
- Electric Power System (EPS)
- Emergency backup power supply
- Emergency light
- Railway signal
- Aircraft signal
- Alarm and security system
- Electronic apparatus and equipment
- Communication power supply
- DC power supply
- Auto control system

Dimensions

F9 Terminal

Unit : mm (Inches)



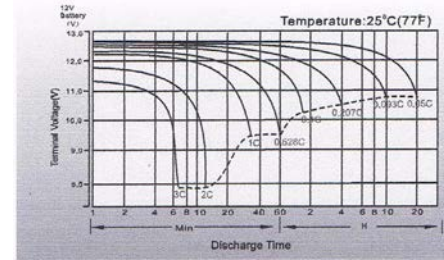
Constant Current Discharge (Ampere) at 25°C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	539.1	383.3	314.0	263.36	195.68	143.56	112.87	67.18	48.97	39.11	32.73	27.74	21.75	17.92	9.66
1.80V/cell	615.5	411.4	337.0	282.69	202.40	144.57	113.66	67.65	49.31	39.38	32.96	28.29	22.19	18.28	9.80
1.75V/cell	645.3	416.1	340.8	285.88	204.68	146.20	114.94	68.42	49.87	39.83	33.33	28.75	22.53	18.56	10.00
1.70V/cell	698.8	437.0	357.9	300.27	214.98	153.56	120.72	69.30	50.51	40.34	33.76	29.10	22.83	18.80	10.10
1.65V/cell	813.6	500.0	379.1	309.80	217.51	155.37	122.14	70.12	51.11	40.82	34.16	29.45	23.10	19.02	10.21
1.60V/cell	828.7	503.7	381.9	306.04	219.12	156.51	123.04	70.63	51.48	41.12	34.41	29.66	23.27	19.16	10.27

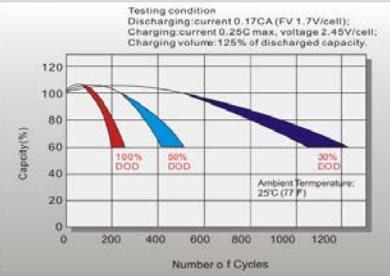
Constant Power Discharge (Watts/cell) at 25°C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	1024.2	731.6	604.6	495.6	372.6	276.0	224.41	134.37	99.54	80.27	68.03	59.15	46.95	36.29	19.63
1.80V/cell	1169.5	835.3	642.6	526.7	396.0	293.3	238.49	142.81	108.78	83.96	69.96	60.84	47.90	37.01	19.83
1.75V/cell	1193.9	852.8	656.0	537.7	404.3	299.5	243.46	145.79	107.99	85.71	71.42	62.11	48.90	37.50	20.13
1.70V/cell	1292.8	923.4	710.3	582.2	418.9	303.5	240.89	139.25	100.90	80.08	66.73	59.58	46.92	37.61	20.29
1.65V/cell	1464.4	915.3	704.0	577.1	415.2	300.8	238.77	138.02	100.01	79.37	66.15	59.06	47.63	38.05	20.44
1.60V/cell	1491.7	932.3	717.2	587.8	422.9	306.5	243.22	140.59	101.88	80.85	67.38	60.16	48.52	38.33	20.54

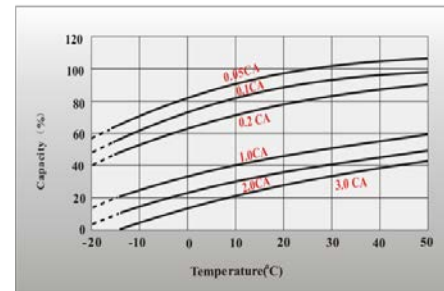
Discharge Characteristics



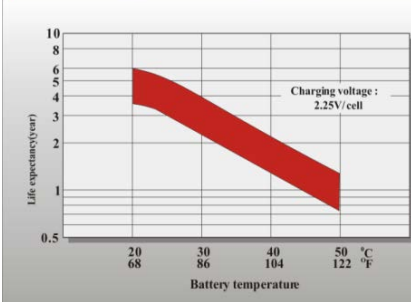
Cycle Life in Relation to Depth of Discharge



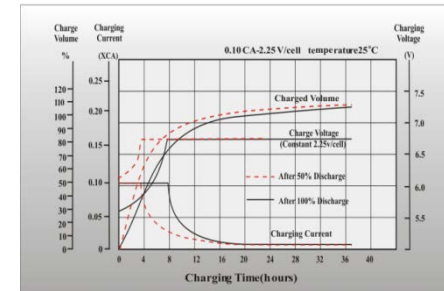
Temperature Effects in Relation to Battery Capacity



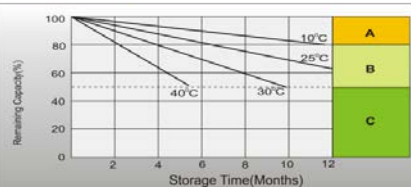
Effect of Temperature on Long Term Float Life



Float Charging Characteristics



Self Discharge Characteristics



- A** No supplementary charge required (Carry out supplementary charge before use if 100% capacity is required)
- B** Supplementary charge required before use. Optional charging way as follows the table of charging system.
- C** Supplementary charge may often fail to recover the capacity. The battery should never be left standing till this is reached.

State of Charge (SOC)

Open Circuit Voltage (Vcell)	Open Circuit Voltage (12V Battery)	Open Circuit Voltage (6V Battery)	State of Charge (% of full charge capacity)
2.14-2.15	12.84-12.90	6.42-6.46	100
2.12-2.13	12.72-12.78	6.36-6.39	90
2.11	12.66	6.33	80
2.09	12.54	6.27	70
2.07	12.42	6.21	60
2.05	12.30	6.15	50

Charging System

D o D	Current Limit (A)	Constant Voltage (V)	Fully Charged Time (h)
20	0.15C ₁₀	13.5-13.8 vpc (12V)	10
	0.20C ₁₀	6.75-6.9 vpc (6V)	8
50	0.15C ₁₀	13.5-13.8 vpc (12V)	15
	0.20C ₁₀	6.75-6.9 vpc (6V)	12
80	0.15C ₁₀	13.5-13.8 vpc (12V)	16
	0.20C ₁₀	6.75-6.9 vpc (6V)	14
100	0.15C ₁₀	13.5-13.8 vpc (12V)	20
	0.20C ₁₀	6.75-6.9 vpc (6V)	18