



# PT.SELATAN JADI JAYA

FACTORY :  
 Jl.Raya Panjunan No.8  
 Desa Panjunan Kec.Sukodono (61258) Telp : 62-31 787251 - 12 (Hunting)  
 Sidoarjo, Jatim-Indonesia Fax : 62 -31 7885579

## FORCE SERIES VRLA (12V120 AH)



### Product Specification

Nominal Voltage	12V
Nominal Capacity (20HR)	120 AH
Dimensions	Length 330±1mm (12.99 inches)
	Width 172±1mm (6.77 inches)
	Container Height 217±1mm (8.54 inches)
	Total Height (with terminal) 220±1mm (8.66 inches)
Approx Weight	Approx 34.5 kg (76.05 lbs)
Terminal	F12 (M8) 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	120 AH/6.0A (20hr, 1.75V/cell, 25°C/77°F)
	110 AH/11.0A (10hr, 1.75V/cell, 25°C/77°F)
	100 AH/20.0 A (5hr, 1.70V/cell, 25°C/77°F)
	90 AH/30.0 A (3hr, 1.70V/cell, 25°C/77°F)
	73.5 AH/73.5 A (1hr, 1.60V/cell, 25°C/77°F)
Max. Discharge Current	1320A (5a)
Internal Resistance	Approx 4.9 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 36.0A. Voltage 14.4V~14.8V at 25°C (77°F) Temp. Coefficient -30mV/°C
Standby Use	No limit on Initial Charging Current Voltage 13.5V~13.8V at 25°C (77°F) Temp. Coefficient -20mV/°C
Capacity affected by Temperature	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.

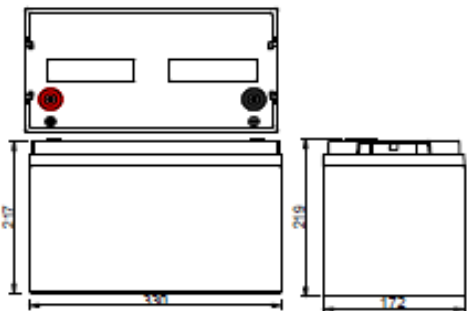
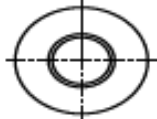
### Applications

- 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

#### ▲ F12 (M8) Terminal

Unit : mm (inches)



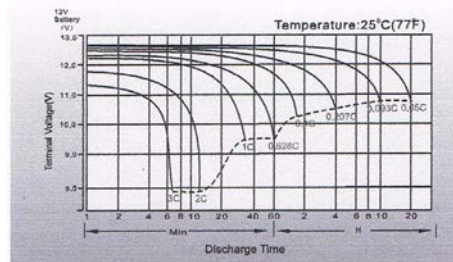
### Constant Current Discharge (Ampere) at 25°C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	322.3	229.2	187.7	157.49	117.01	85.85	67.49	40.17	29.28	23.39	19.57	16.58	13.01	10.71	5.78
1.80V/cell	368.1	246.0	201.5	169.04	121.03	86.45	67.96	40.45	29.49	23.55	19.71	16.91	13.27	10.93	5.86
1.75V/cell	387.5	249.9	204.6	171.68	122.92	87.80	69.02	41.09	29.95	23.92	20.02	17.18	13.47	11.10	5.98
1.70V/cell	417.9	261.3	214.0	179.55	128.55	91.82	72.19	41.44	30.20	24.12	20.19	17.40	13.65	11.24	6.04
1.65V/cell	486.5	299.0	226.7	181.66	130.06	92.90	73.04	41.93	30.56	24.41	20.43	17.61	13.81	11.38	6.11
1.60V/cell	495.5	301.2	228.5	183.00	131.02	93.59	73.58	42.34	30.78	24.59	20.58	17.74	13.91	11.46	6.14

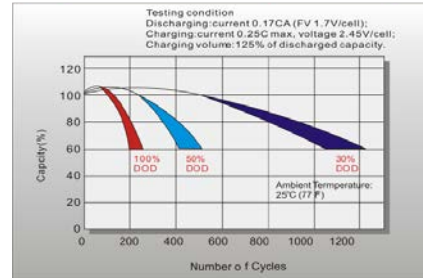
### Constant Power Discharge (Watts/cell) at 25°C (77°F)

F.V/Time	5min	10min	15min	20min	30min	45min	1h	2h	3h	4h	5h	6h	8h	10h	20h
1.85V/cell	612.4	437.5	361.5	296.3	222.8	165.0	134.19	80.35	59.52	48.00	40.68	35.37	28.07	21.70	11.74
1.80V/cell	699.3	499.5	384.2	314.9	236.8	175.4	142.61	85.39	63.25	50.20	41.83	36.38	28.64	22.13	11.85
1.75V/cell	717.0	512.1	393.9	322.9	242.8	179.8	146.21	87.55	64.85	51.47	42.89	37.30	29.37	22.42	12.04
1.70V/cell	773.0	552.2	424.7	348.1	250.5	181.5	144.05	83.26	60.34	47.89	39.90	35.63	28.05	22.49	12.13
1.65V/cell	875.7	547.3	421.0	345.1	248.3	179.9	142.77	82.53	59.80	47.46	39.55	35.31	28.48	22.75	12.22
1.60V/cell	892.0	557.5	428.8	351.5	252.9	183.2	145.44	84.07	60.92	48.35	40.29	35.97	29.01	22.92	12.28

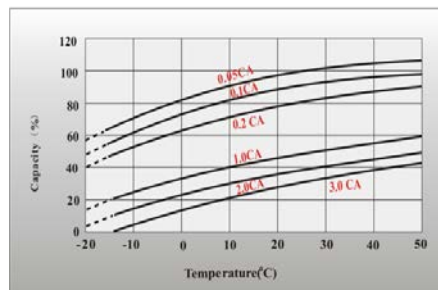
### Discharge Characteristics



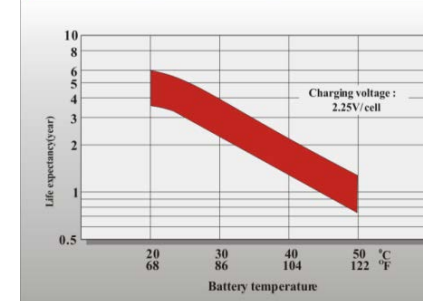
### Cycle Life in Relation to Depth of Discharge



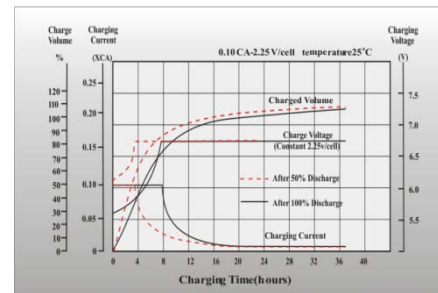
### Temperature Effects in Relation to Battery Capacity



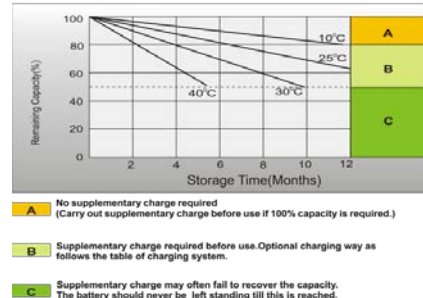
### Effect of Temperature on Long Term Float Life



### Float Charging Characteristics



### Self Discharge Characteristics



### State of Charge (SOC)

Open Circuit Voltage (V/cell)	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 <sub>10</sub>	13.5-13.8 vpc (12V)	10
	0.20C <sub>10</sub>	6.75-6.9 vpc (6V)	8
50	0.15C <sub>10</sub>	13.5-13.8 vpc (12V)	15
	0.20C <sub>10</sub>	6.75-6.9 vpc (6V)	12
80	0.15C <sub>10</sub>	13.5-13.8 vpc (12V)	16
	0.20C <sub>10</sub>	6.75-6.9 vpc (6V)	14
100	0.15C <sub>10</sub>	13.5-13.8 vpc (12V)	20
	0.20C <sub>10</sub>	6.75-6.9 vpc (6V)	18