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# HR 1224W ▶ 12V 24W

HR 1224W is specially designed for high efficient discharge application. Its characteristics are high energy density, small footprint and high discharge efficiency. It can be used for more than 260 cycles at 100% discharge in cycle service, up to 5 years in standby service.



## ► Specification

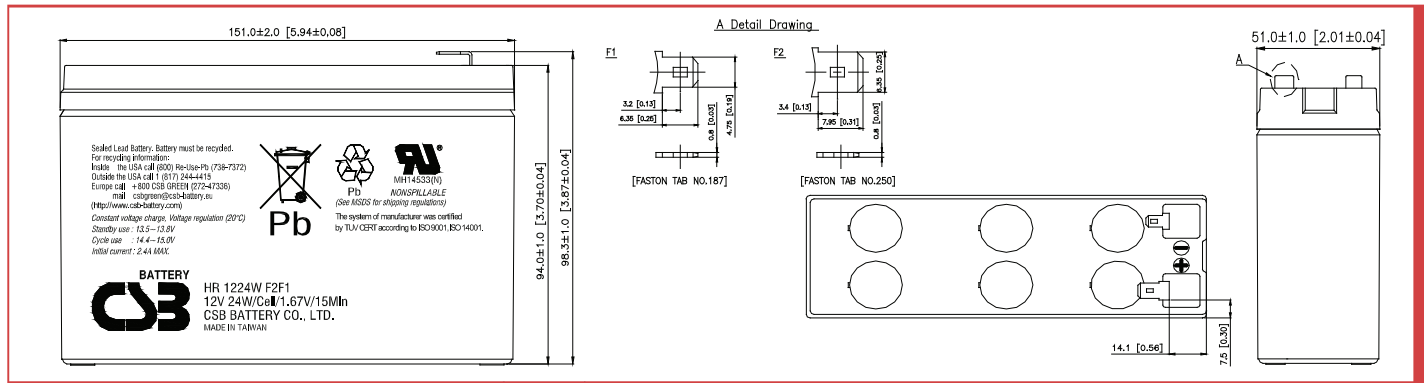
<b>Cells Per Unit</b>	6
<b>Voltage Per Unit</b>	12
<b>Capacity</b>	24W @ 15min-rate to 1.67V per cell @25 °C (77°F)
<b>Weight</b>	Approx. 1.95 kg(4.3 lbs)
<b>Maximum Discharge Current</b>	100A/130A(5sec)
<b>Internal Resistance</b>	Approx. 21 mΩ
<b>Operating Temperature Range</b>	Discharge: -15°C~50°C ( 5°F~122°F) Charge: -15 °C~40°C ( 5°F~104°F) Storage: -15°C~40°C ( 5°F~104°F)
<b>Nominal Operating Temperature Range</b>	25°C±3°C (77°F±5°F)
<b>Float Charging Voltage</b>	13.5 to 13.8 VDC/unit Average at 25°C (77°F)
<b>Recommended Maximum Charging Current Limit</b>	2.4A
<b>Equalization and Cycle Service</b>	14.4 to 15.0 VDC/unit Average at 25°C (77°F)
<b>Self Discharge</b>	CSB Batteries can be stored for more than 6 months at 25°C (77°F). Please charge batteries before using. For higher temperatures the time interval will be shorter.
<b>Terminal</b>	F1/F2-Faston Tab187/250
<b>Container Material</b>	ABS(UL 94-HB) & Flammability resistance of (UL 94-V0) can be available upon request.



CSB-manufactured VRLA batteries are UL-recognized components under UL1989.

CSB is also certified by ISO 9001 and ISO 14001.

Dimensions :	Overall Height (H)	Container height (h)	Length (L)	Width (W)
Unit: mm (inch)	98.3±1.0 (3.87±0.04)	94.0±1.0 (3.70±0.04)	151.0±2.0(5.94±0.08)	51.0±1.0 (2.01±0.04)



## Constant Current Discharge Characteristics Unit:A (25°C ,77°F)

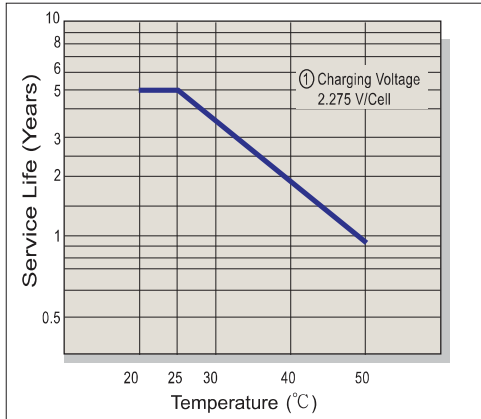
F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	47.5	33.0	26.1	22.0	18.9	14.0	11.0	7.95	4.29	3.43
1.67V	44.1	31.1	24.7	21.0	18.0	13.5	10.6	7.76	4.20	3.34
1.70V	42.7	30.3	24.0	20.5	17.6	13.2	10.5	7.67	4.15	3.30
1.75V	40.5	28.8	23.0	19.8	17.0	12.8	10.2	7.56	4.10	3.26
1.80V	38.4	27.4	22.2	19.1	16.4	12.5	10.0	7.49	4.06	3.22
1.85V	36.4	26.0	21.3	18.5	16.0	12.1	9.84	7.44	4.04	3.19

## Constant Power Discharge Characteristics Unit:W (25°C ,77°F)

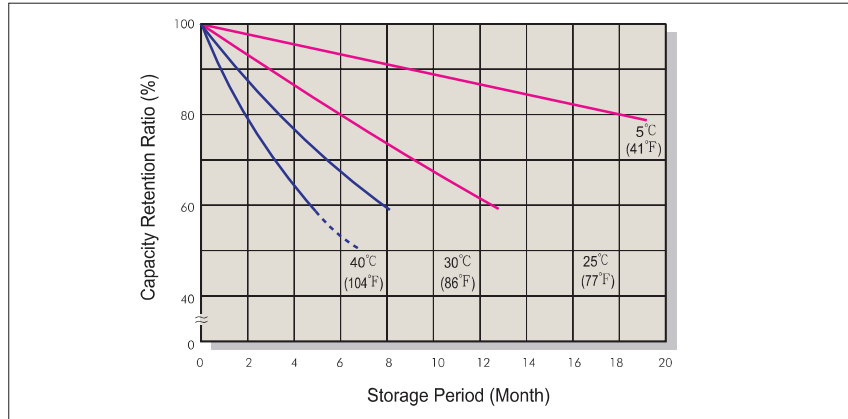
F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	570	396	313	264	228	168	132	95.4	51.5	41.2
1.67V	529	373	297	251	217	162	128	92.9	50.3	40.2
1.70V	512	363	289	246	212	159	126	92.1	49.9	39.7
1.75V	486	346	277	238	204	154	123	90.8	49.3	39.2
1.80V	461	329	266	229	197	149	121	89.9	48.8	38.8
1.85V	437	314	256	219	187	144	119	89.2	48.5	38.6

Ratings presented herein are subject to revision without notice. Please refer to [www.csb-battery.com](http://www.csb-battery.com) to confirm the latest version.

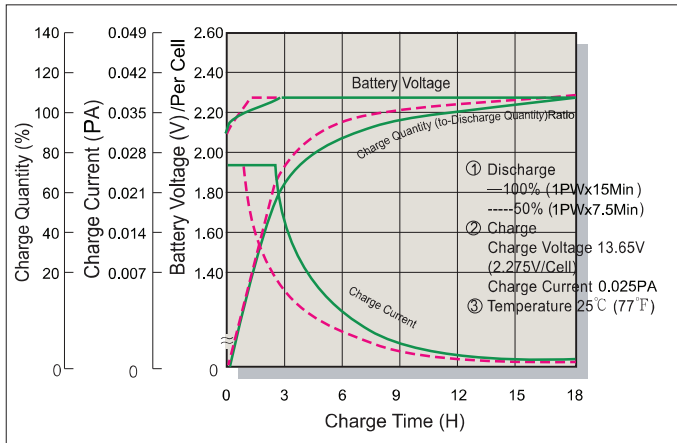
### Trickle (or Float) Service Life



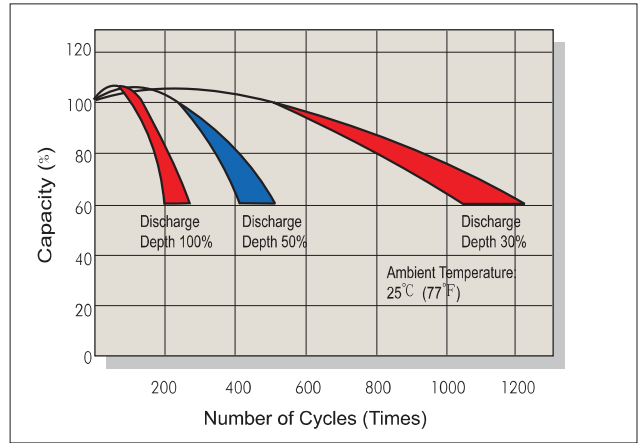
### Capacity Retention Characteristic



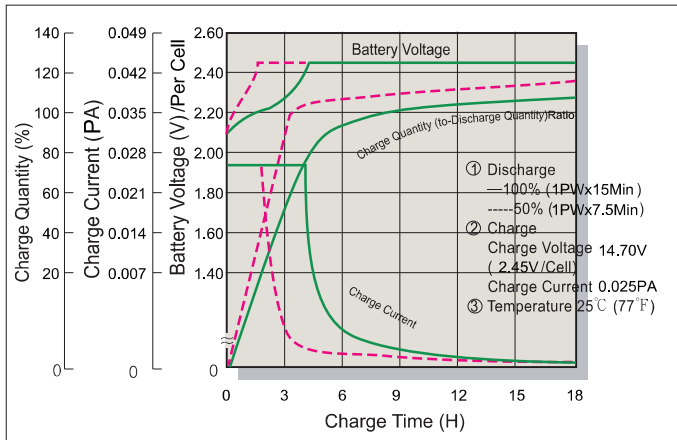
### Battery Voltage and Charge Time for Standby Use



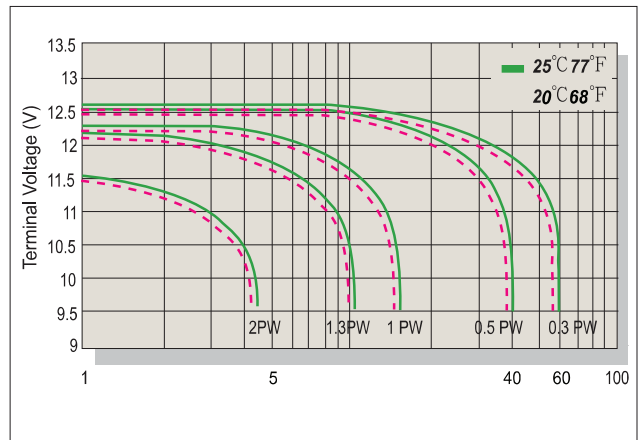
### Cycle Service Life



### Battery Voltage and Charge Time for Cycle Use



### Terminal Voltage (V) and Discharge Time



### Charging Procedures

Application	Charge Voltage(V/Cell)			Max.Charge Current
	Temperature	Set Point	Allowable Range	
Cycle Use	25°C(77°F)	2.45	2.40-2.50	0.1PA
Standby	25°C(77°F)	2.275	2.25-2.30	

### Discharge Current VS. Discharge Voltage

Final Discharge Voltage V/Cell	1.75	1.70	1.60	1.30
Discharge Power(W)	0.1P>(W)	0.1P≤(W)<0.25P	0.25P≤(W)<1.0P	(W)≥1.0P

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