



HR 1224W F2F1

12V 24W

HR 1224W F2F1 is specially designed for high efficient discharge application. Its characteristics are small volume, light weight and high discharge efficiency. It can be used for more than 260 cycles at 100% discharge in cycle service, or three to five years in standby service.



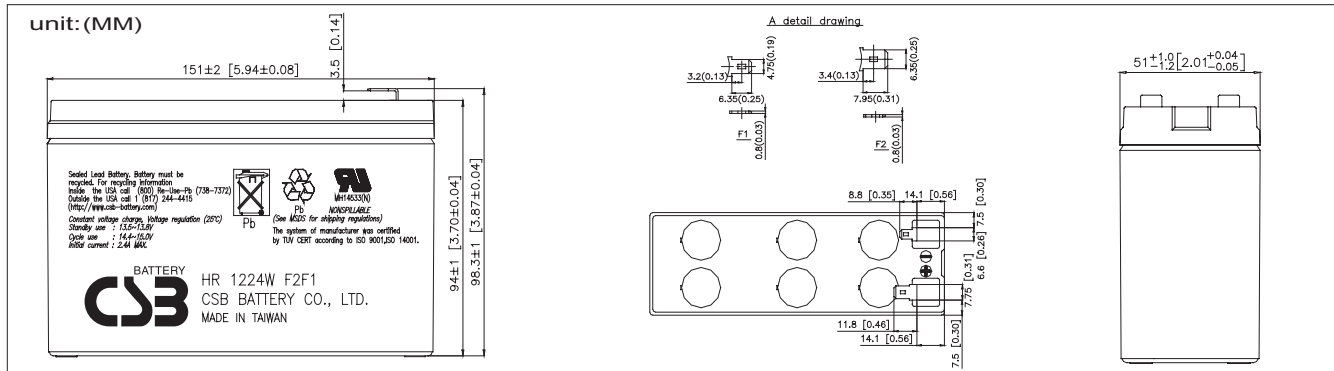
Specification

Cells Per Unit	6
Voltage Per Unit	12
Capacity	24W @ 15minute-rate to 1.67V per cell @25 °C(77°F)
Weight	Approx. 2.10kg(4.63 lbs)
Maximum Discharge Current	90A(5sec)
Internal Resistance	Approx. 25mΩ
Operating Temperature Range	Discharge: -20°C~50°C(-4°F~122°F) Charge: 0°C~40°C(32°F~104°F) Storage: -20°C~40°C(-4°F~104°F)
Nominal Operating Temperature Range	25°C±3°C(77°F±5°F)
Float Charging Voltage	13.5 to 13.8 VDC/unit Average at 25°C(77°F)
Recommended Maximum Charging Current Limit	2.4A
Equalization and Cycle Service	14.4 to 15.0 VDC/unit Average at 25°C(77°F)
Self Discharge	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.
Terminal	Faston Tab 187/250
Container Material	-ABS (UL94-HB)*Flammability resistance of UL94-V2 can be available upon request.



CSB-manufactured batteries are UL-recognized components under UL924 as well as ISO 9001 and ISO 14001 certified.

Dimensions



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

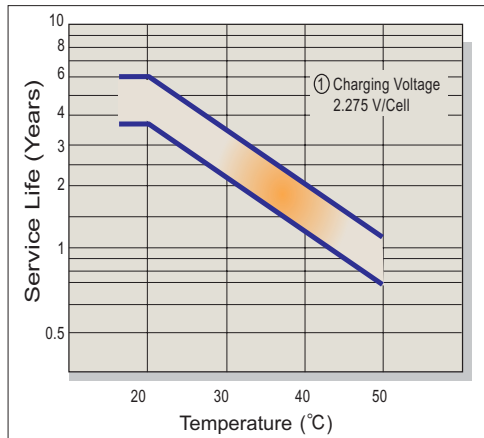
F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	47.5	33.0	25.8	22.0	18.9	14.0	11.0	7.95	4.29	3.43
1.67V	44.0	31.1	24.5	21.0	18.0	13.5	10.4	7.64	4.16	3.29
1.70V	42.5	30.3	23.9	20.5	17.7	13.3	10.2	7.51	4.10	3.23
1.75V	40.5	28.8	23.0	19.8	16.9	12.8	10.1	7.49	4.08	3.23
1.80V	38.4	27.4	22.2	19.2	16.1	12.4	10.0	7.46	4.06	3.23
1.85V	36.4	26.0	21.3	18.5	15.3	12.0	9.92	7.44	4.04	3.23

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

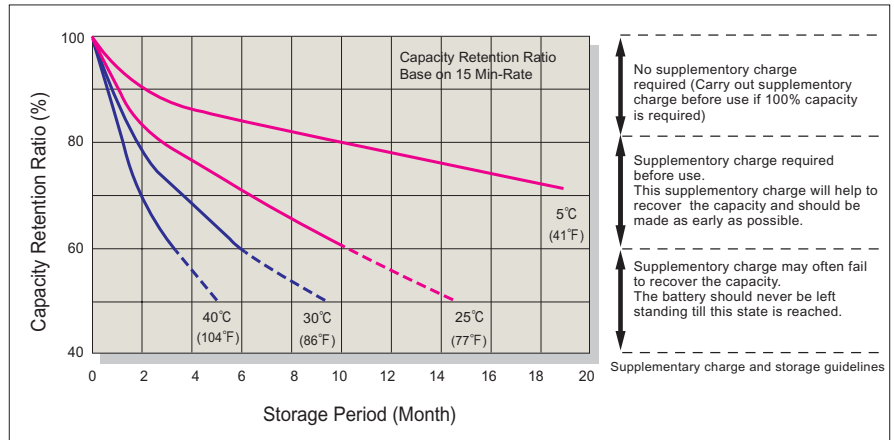
F.V/Time	2MIN	4MIN	6MIN	8MIN	10MIN	15MIN	20MIN	30MIN	60MIN	90MIN
1.60V	570	396	309	264	227	168	132	95.4	51.5	41.2
1.67V	528	373	294	251	217	162	125	91.7	49.9	39.5
1.70V	510	363	287	246	212	159	122	90.1	49.2	38.8
1.75V	486	346	277	238	203	154	121	89.8	49.0	38.8
1.80V	461	329	266	230	193	149	120	89.5	48.7	38.7
1.85V	437	312	256	222	184	144	119	89.2	48.5	38.7

- All mentioned values are average values.
- Low rate discharge mode (over 90 mins.) is not recommended.

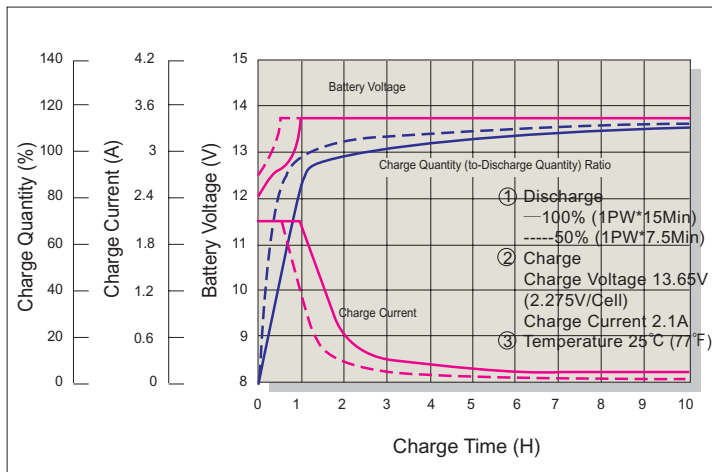
Trickle (or Float) Service Life



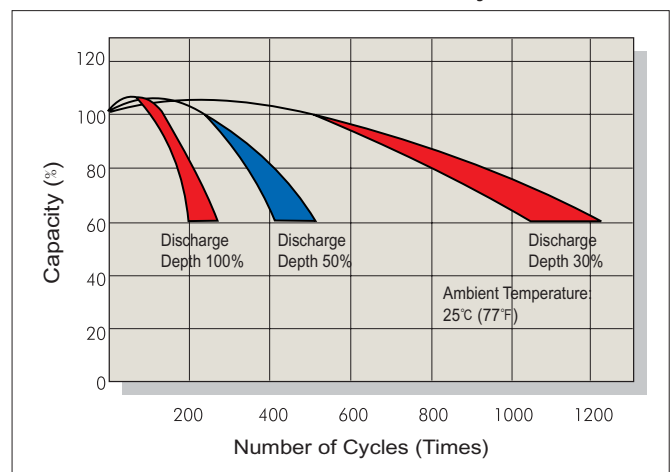
Capacity Retention Characteristic



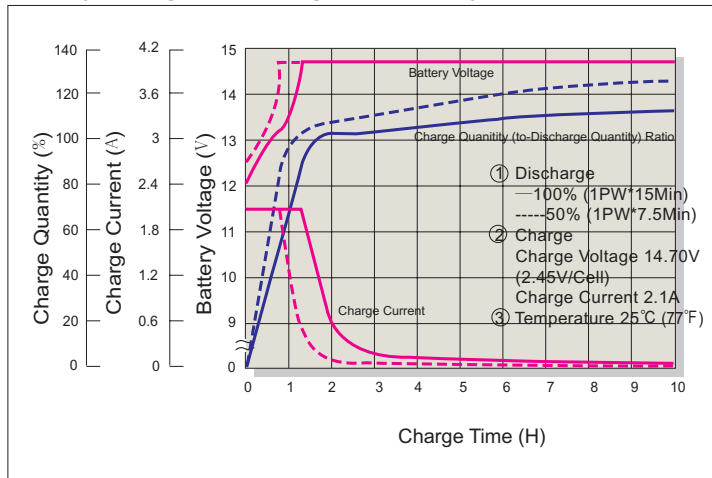
Battery Voltage and Charge Time for Standby Use



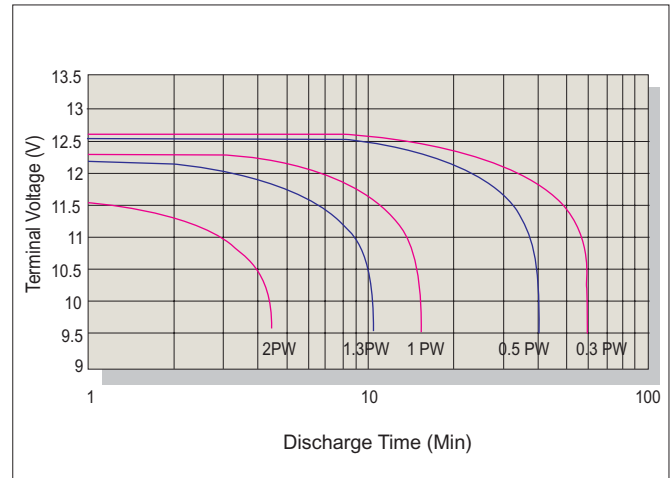
Cycle Service Life



Battery Voltage and Charge Time for Cycle Use



Terminal Voltage (V) and Discharge Time (25°C 77°F)



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	0.3C
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	1.55	1.30
Discharge Current (A)	0.2C>(A)	0.2C<(A)<0.5C	0.5C<(A)<1.0C	(A)>1.0C