

General features for MPHR series battery

- ★ MPHR stands for "High Rate Discharge." The series is a modern hi-tech energy application product;
- ★ Lead-calcium alloy grids and the use of high purity lead account for superior shelf-life characteristics;
- ★ Precision plate pasting for higher consistency with 100% load testing to ensure uniform capacity;
- ★ When it is used in safe surroundings, the battery is maintenance free, and you never need to add electrolyte, it can be recycled repeatedly;
- ★ High energy, high intensity, high quality output electrical energy product series.



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MPHR12-21W (12V4.5Ah)

Specifications

Nominal Voltage		12V
Number of cell		6 cells
Rated capacity (25°C)	Rated capacity/cell (15 minutes rate to 1.67V/cell)	21W
	Rated capacity (20 hour rate)	4.5Ah
Dimensions (±1mm)	Total Height	106mm (4.17 inches)
	Height	101mm (3.98 inches)
	Length	90mm (3.54 inches)
	Width	70mm (2.76 inches)
Weight Approx (±3%)		1.65Kg (3.64 lbs)

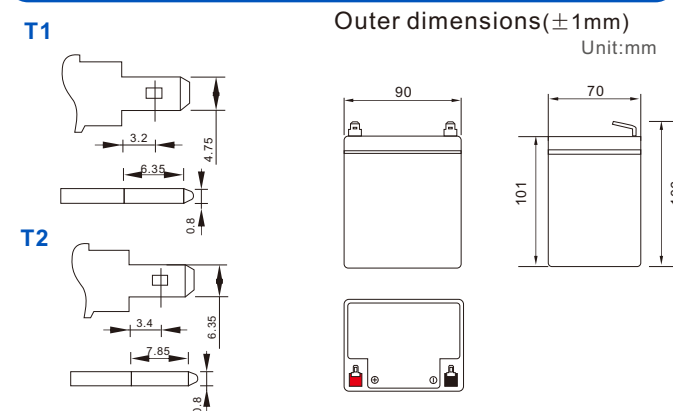
Battery picture and construction



Battery Construction

Component	Positive plate	Negative plate	Container	Cover
Raw material	Lead dioxide	Lead	ABS	ABS
Component	Electrolyte	Separator	Safety valve	Terminal
Raw material	Dilute sulfuric acid	Fiberglass	Rubber	Copper

Outer dimension and terminal



Characteristics

Capacity 25°C (77°F)	30 minutes rate (5.69A, 1.70V/cell) 15 minutes rate (10.76A, 1.67V/cell) 10 minutes rate (15.2A, 1.6V/cell)	71W 126W 178.4W
Internal Resistance	Full charged battery at 25°C (77°F)	Approx 25 mΩ
Capacity affected by Temperature (20hour rate)	40°C (104°F)	102%
	25°C (77°F)	100%
	0°C (32°F)	85%
	-15°C (5°F)	65%
Remaining capacity Self-Discharge At 25°C (77°F)	Capacity after 3 month storage	91%
	Capacity after 6 month storage	82%
	Capacity after 12 month storage	64%
Terminal type	T1 (option T2)	
Max. Discharge current 25°C/(77°F)	75A (5Seconds)	
Nominal operating temperature	25°C ±5°C (77°F ±9°F)	
Operating Temperature Range	Discharge	-15°C ~ 50°C (5°F ~ 122°F)
	Charge	-10°C ~ 50°C (14°F ~ 122°F)
	Storage	-20°C ~ 50°C (-4°F ~ 122°F)
Charge methods (constant Voltage) At 25°C (77°F)	Cycle use	Initial Charging Current less than 1.35 A Voltage 14.50-15.00V Temperature compensation: -30mV/°C
	Standby use	Voltage 13.50-13.80V Temperature compensation: -18mV/°C

Constant current discharge (25°C , 77 °F)

Unit:A

Time F.V/cell	5min	10min	15min	30min	60min	5hours	10hours	20hours
1.60V	19.17	15.20	10.86	6.06	3.30	0.88	0.43	0.24
1.67V	18.25	14.22	10.76	5.80	3.15	0.86	0.42	0.24
1.70V	17.37	13.92	10.11	5.69	3.10	0.86	0.42	0.23
1.75V	16.51	13.17	9.72	5.58	3.09	0.82	0.41	0.23
1.80V	15.41	12.42	9.31	5.48	3.07	0.80	0.41	0.22
1.85V	14.77	12.11	8.91	5.36	3.05	0.77	0.40	0.22

Note:
the end voltage means Voltage per cell.
(Above characteristics data are average values obtained within three charge/discharge cycles, not the minimum values.)

Constant power discharge (25°C , 77 °F)

Unit:watts

Time F.V/cell	2min	4min	6min	8min	10min	15min	30min	60min
1.60V	416.9	311.2	242.5	207.3	178.4	131.6	75.1	40.4
1.67V	388.5	291.0	226.4	196.3	168.7	126.0	71.5	38.9
1.70V	376.5	282.4	219.4	191.7	164.5	123.6	71.0	38.2
1.75V	356.8	267.4	212.2	184.5	156.5	119.2	69.9	38.0
1.80V	337.2	252.9	205.0	177.3	148.4	114.9	68.7	37.9
1.85V	317.5	238.1	197.7	170.0	140.3	110.3	67.6	37.7

Note:
the end voltage means Voltage per cell.
(Above characteristics data are average values obtained within three charge/discharge cycles, not the minimum values.)

General features for MPHR12-21W (High rate discharge)

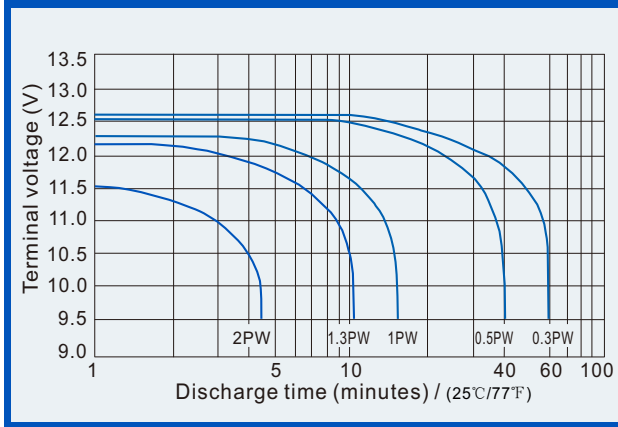
- * Positive and negative plates in lead-calcium tin alloy
- * Superior energy density
- * Operates at a low internal pressure.
- * Gas Recombination
- * Very high power output
- * Application specific designs
- * Six months self-life at 25°C (77°F), then a freshening charge is required.
- * Design life 5 years @ floating service at 25°C (77°F).



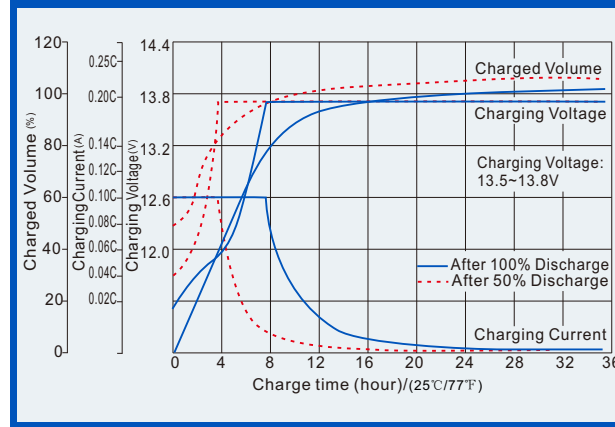
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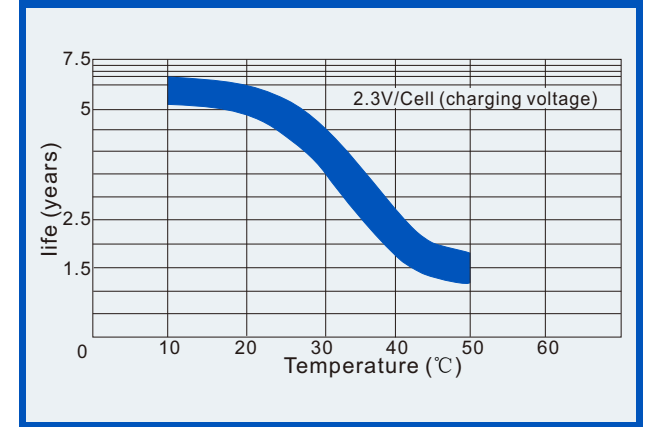
Terminal voltage(V) and discharge time



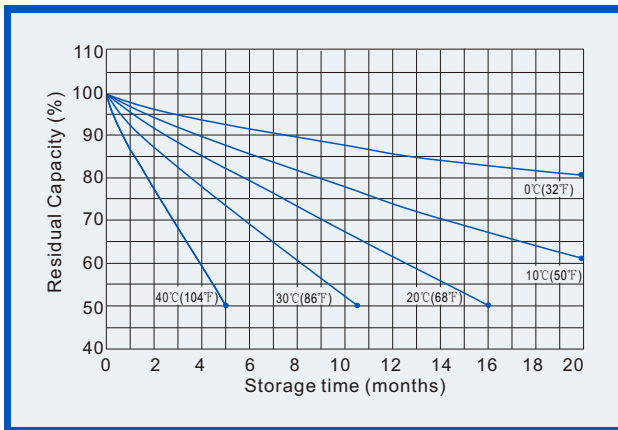
Battery voltage and charge time for standby use



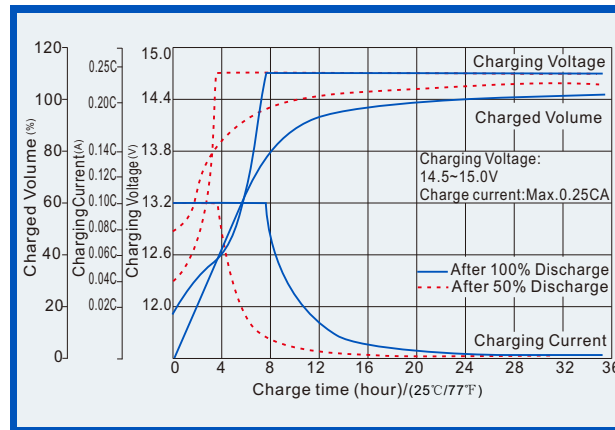
Life Characteristics of float service



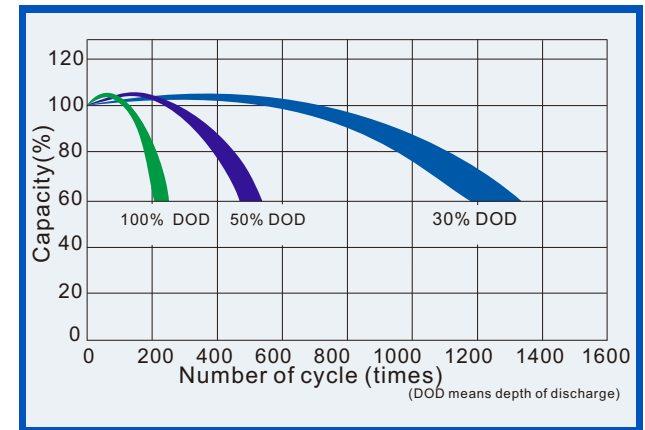
Self-discharge characteristics



Battery voltage and charge time for cycle use



Life characteristics of Cyclic Use



Charging procedures

Application	Charging voltage(V)			Max Charging current
	Temperature	Set Point	Allowable range	
Cycle Use	25°C(77°F)	14.70	14.50~15.00	1.35A
Standby Use		13.70	13.50~13.80	

Discharging current & discharging voltage

Final Discharging Voltage (V)	10.50	10.20	9.60	7.80
Discharging Power (W)	W < 0.1P	0.1P ≥ (W) < 0.25P	0.25P ≤ (W) < 1.0P	W ≥ 1.0P