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# HR SERIES-HIGH RATE **BATTERIES**

HR 12110W

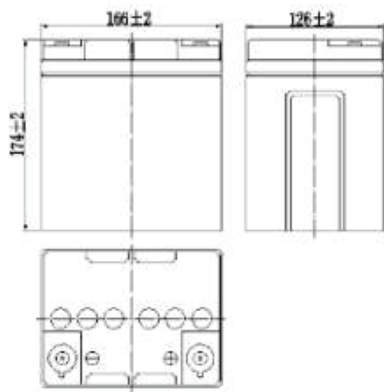


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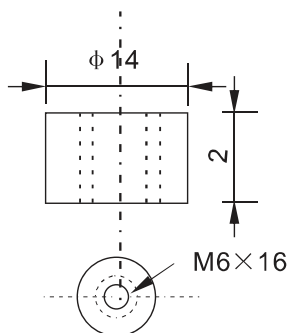
# HR 12110W



## Outer Dimensions (mm)



## Terminal Type (mm)



T14

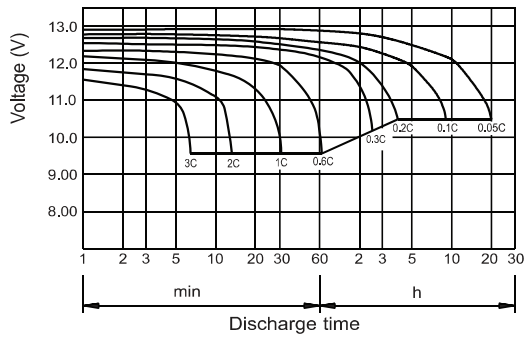
## SPECIFICATIONS

Nominal Voltage	12V	
Number of Cell	6 cells	
Rated Capacity (15min. rat)	110 Watts/cell	
Dimensions	Length	166±2mm(6.54inch)
	Width	126±2mm(4.96inch)
	Height	174±2mm(6.85inch)
	Total Height	174±2mm(6.85inch)
Approx. Weight	8.8kg (19.4lbs)±3%	

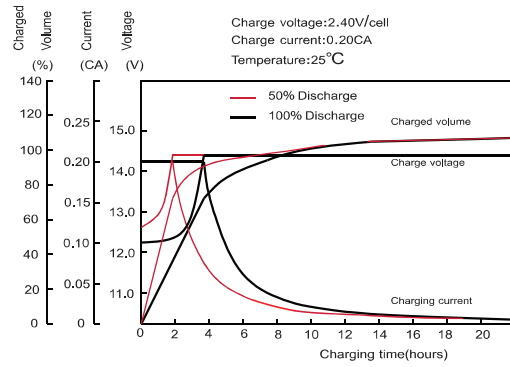
## CHARACTERISTICS

Capacity (20HR, 25°C)	28Ah	
Capacity (15min.rate, 25°C)	110 Watts/cell	
Terminal Type	T2/T1	
Internal Resistance (Fully Charged, 25°C)	Approx. 9mΩ	
Capacity Affected by Temperature (10HR)	40°C	102%
	25°C	100%
	0°C	85%
	-15°C	65%
Self-Discharge (25°C)	3 months	Remaining Capacity: 91%
	6 months	Remaining Capacity: 82%
	12months	Remaining Capacity: 65%
Nominal Operating Temperature	25±3°C (77±5°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)
Float Charging Voltage (25°C)	13.50 to 13.80V Temperature Compensation: -18mV/°C	
Cyclic Charging Voltage (25°C)	14.50 to 15.00V Temperature Compensation: -30mV/°C	
Maximum Charging Current	8.4A	
Terminal Material	Copper	
Maximum Discharge Current	300A(5 sec)	
Design Floating Life(20°C)	5 Years	

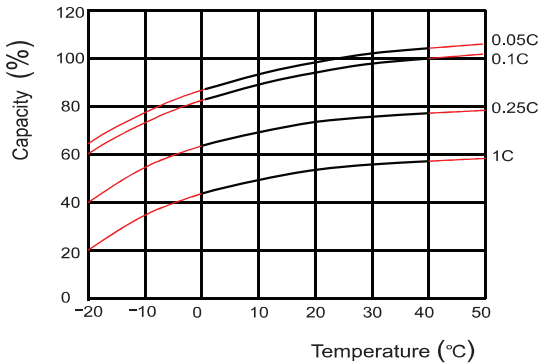
### Discharge Characteristics



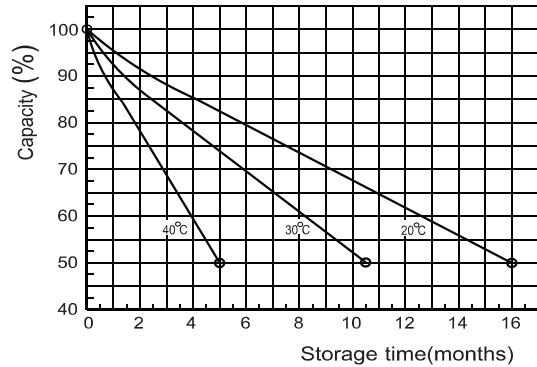
### Charging Characteristics (25°C)



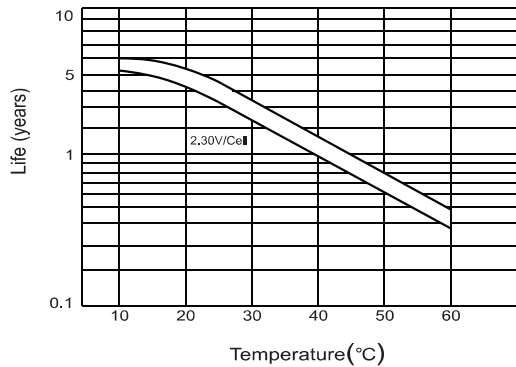
### Effect of Temp on Capacity



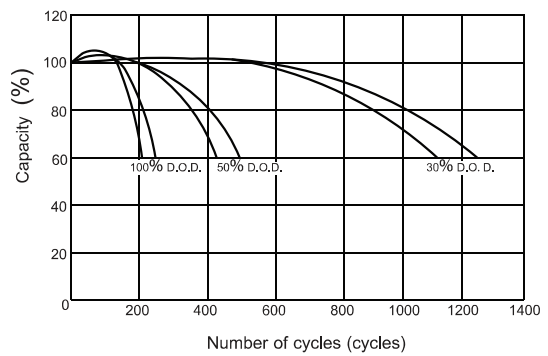
### Self-Discharge Characteristics



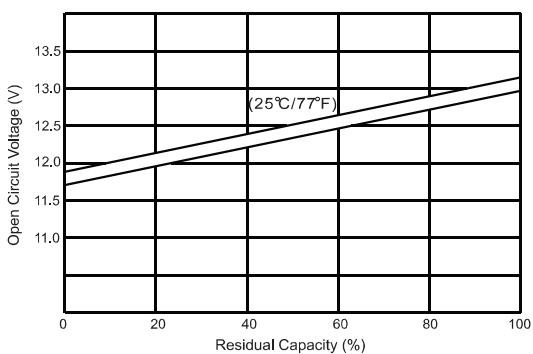
### Floating Life on Temperature



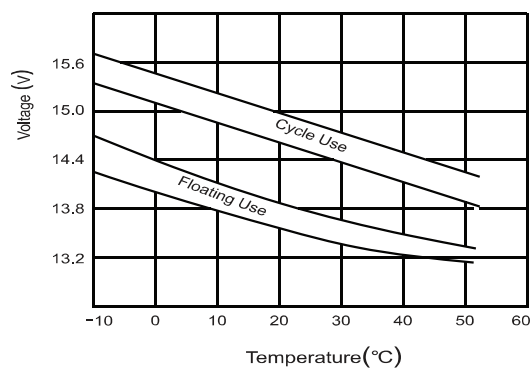
### Cycle Service Life on D.O.D (25°C)



### Relationship for OCV and Capacity (25°C)



### Relationship for Charging Voltage and Temp



## Construction

Component	Positive Plate	Negative Plate	Container	Cover	Separator	Electrolyte	Safety Valve	Terminal
Raw material	Lead Dioxide	Lead	ABS	ABS	AGM	Sulfuric Acid	Rubber	Copper

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

F.V/Time	5min	10min	15min	20min	30min	45min	60min	2h	3h	4h	5h
1.60V/cell	119	73.3	57.6	45.6	30.9	22.9	18.7	10.3	7.31	5.88	5.06
1.67V/cell	114	70.0	55.6	43.7	29.9	22.1	18.2	10.2	7.25	5.83	5.01
1.70V/cell	111	68.2	54.1	42.8	29.3	21.7	18.0	10.1	7.22	5.81	4.99
1.75V/cell	106	65.2	52.3	41.4	28.6	21.2	17.6	9.98	7.17	5.77	4.96
1.80V/cell	100	61.6	49.5	39.2	27.6	20.4	17.1	9.73	6.95	5.59	4.81

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

F.V/Time	5min	10min	15min	20min	30min	45min	60min	2h	3h	4h	5h
1.60V/cell	229	142	114	90.2	61.1	45.3	37.0	20.5	14.7	11.8	10.2
1.67V/cell	218	136	110	86.6	59.2	43.8	36.1	20.3	14.6	11.7	10.1
1.70V/cell	213	132	107	84.8	58.1	43.0	35.5	20.2	14.5	11.7	10.0
1.75V/cell	203	127	104	81.9	56.7	41.9	34.8	19.9	14.4	11.6	9.96
1.80V/cell	192	119	98.0	77.6	54.6	40.4	33.8	19.4	14.0	11.2	9.66



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