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HR SERIES-HIGH RATE **BATTERIES**

HR 12160W



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HR 12160W



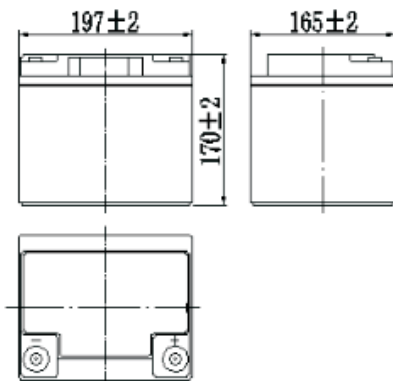
SPECIFICATIONS

Nominal Voltage	12V	
Number of Cell	6 cells	
Rated Capacity (15min. rat)	160 Watts/cell	
Dimensions	Length	197±2mm(7.76inch)
	Width	165±2mm(6.50inch)
	Height	170±2mm(6.69inch)
	Total Height	170±2mm(6.69inch)
Approx. Weight	14.3kg (31.5lbs)±3%	

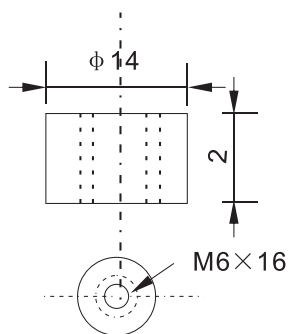
CHARACTERISTICS

Capacity (20HR, 25°C)	45Ah	
Capacity (15min.rate, 25°C)	160 Watts/cell	
Terminal Type	T14	
Internal Resistance (Fully Charged, 25°C)	Approx. 7mΩ	
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	13.5A	
Terminal Material	Copper	
Maximum Discharge Current	400A(5 sec)	
Design Floating Life(20°C)	10 Years	

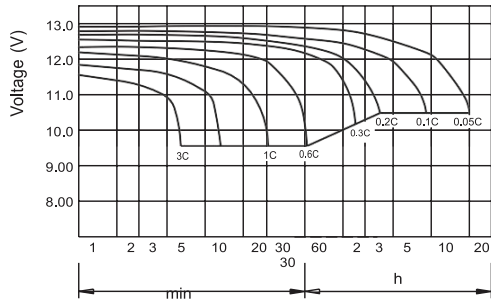
Outer Dimensions (mm)



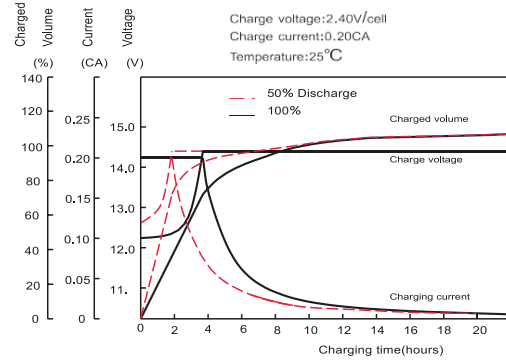
Terminal Type (mm)



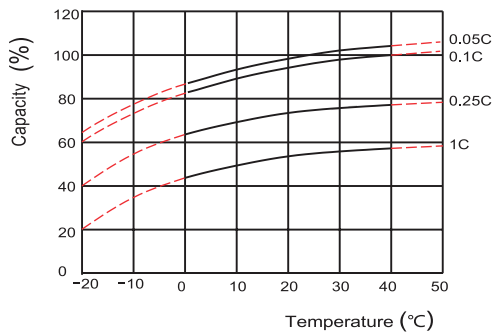
Discharge Characteristics



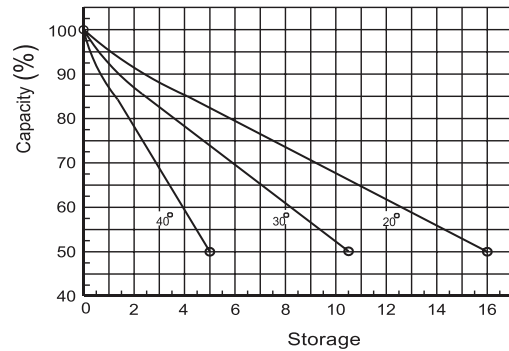
Charging Characteristics (25°C)



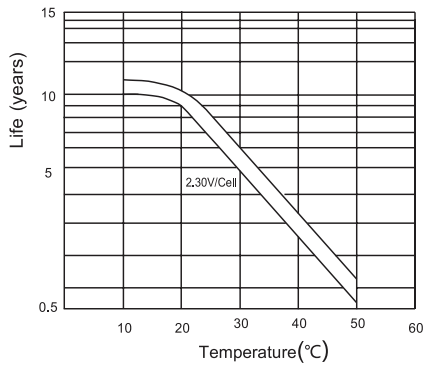
Effect of Temp on Capacity



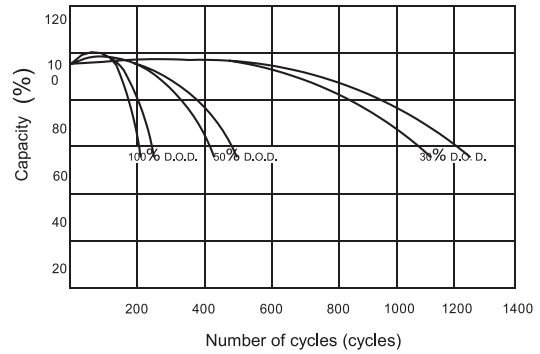
Self-Discharge Characteristics



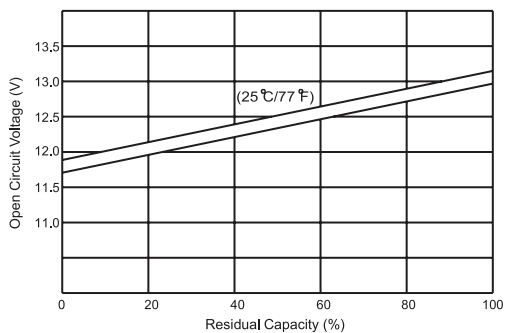
Floating Life on Temperature



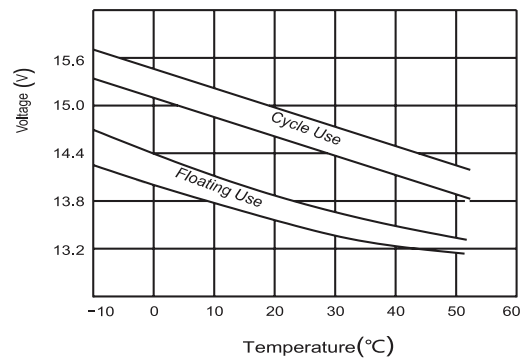
Cycle Service Life on D.O.D (25°C)



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	104	85.5	68.4	48.4	36.1	29.4	16.4	11.8	9.50	8.26	7.07
1.67V/cell	100	82.9	65.6	46.9	34.9	28.7	16.3	11.7	9.42	8.19	7.01
1.70V/cell	97.1	80.3	64.3	46.0	34.3	28.3	16.2	11.6	9.38	8.16	6.98
1.75V/cell	93.0	77.6	62.1	44.9	33.4	27.7	16.0	11.6	9.32	8.10	6.93
1.80V/cell	87.7	73.5	58.8	43.2	32.2	26.8	15.6	11.2	9.04	7.86	6.72

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	196	165	132	93.5	69.6	56.8	32.1	23.2	18.7	16.4	14.0
1.67V/cell	188	160	127	90.5	67.4	55.4	31.8	23.0	18.6	16.2	13.9
1.70V/cell	183	155	124	88.8	66.2	54.5	31.6	22.9	18.5	16.2	13.8
1.75V/cell	175	150	120	86.6	64.6	53.5	31.1	22.8	18.4	16.0	13.7
1.80V/cell	165	142	113	83.5	62.2	51.8	30.3	22.1	17.8	15.6	13.3



Starmax Corporation

1585 Cliveden Avenue, Delta, British Columbia
V3M 6M1, Canada

Phone: +1 888 669 1310

Email: info@starmaxbatteries.com

Website: www.starmaxbatteries.com

