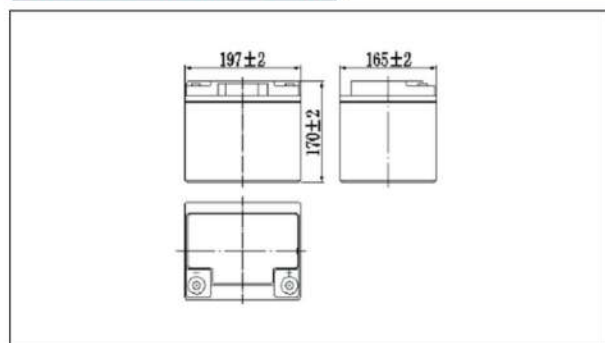


HR12160W-FR (12V 45Ah)

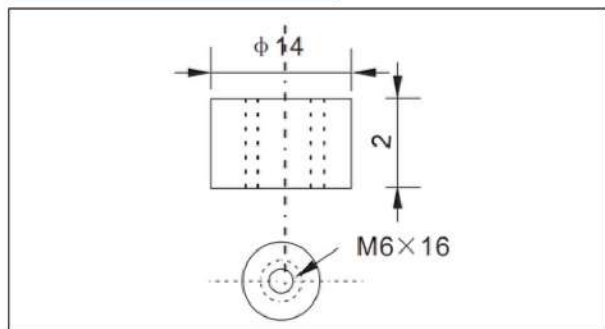
Specifications

Nominal Voltage		12V
Number of cells		6 cells
Rated capacity (15 min.)		160 watts/cell
Dimensions	Length	197+/-2mm
	Width	165+/-2mm
	Height	170+/-2mm
	Total height	170+/-2mm
Approximated weight		14kgs+/-5%

Outer dimensions (mm)



Terminal Type (mm)



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	10min	15min	20min	30min	45min	60min	2h	3h	4h	5h	6h
1.60V/cell	104	85.5	68.4	48.4	36.1	29.4	16.4	11.8	9.5	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	77.6	62.1	44.9	33.4	27.7	16	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°C)

F.V/Time	10min	15min	20min	30min	45min	60min	2h	3h	4h	5h	6h
1.60V/cell	196	165	132	93.5	69.6	56.8	32.1	23.2	18.7	16.4	14
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	13.7
1.80V/cell	165	142	113	83.5	62.2	51.8	30.3	22.1	17.8	15.6	13.3

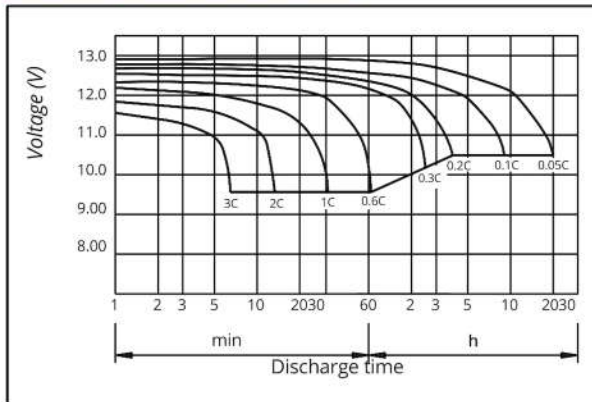


Characteristics

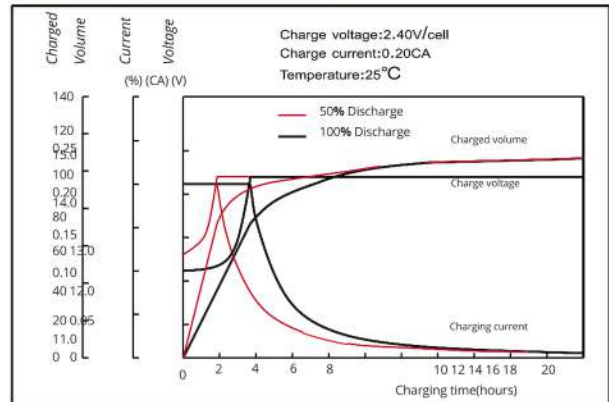
Capacity (20HR,25°C)	45Ah
Capacity (15min.rate,25°C)	160W/Cell
Terminal type	T14
Internal resistance (Fully charged @ 25°C)	7mΩ
Capacity affected by temperature (10HR)	40°C: 102% 25°C: 100% 0°C: 85% -15°C: 65%
Self-discharge (25°C)	3 months: Remaining capacity 91% 6 months: Remaining capacity 82% 12 months: Remaining capacity 65%
Nominal operating temperature	25°C ± 3°C
Operating temperature range	Discharge: -15°C - 50°C Charge: -15°C - 50°C Storage: -20°C - 50°C
Float charging voltage (25°C)	13.5 to 13.80V Temp. compensation -18mV/°C
Cyclic charging voltage (25°C)	14.5 to 15.00V Temp. compensation -30mV/°C
Maximum charging current	13.5A
Terminal material	Copper
Maximum discharge current	400A (5 sec.)
Designed floating life (20°C)	10 years

HR1221W-FR (12V21 Watts/cell)

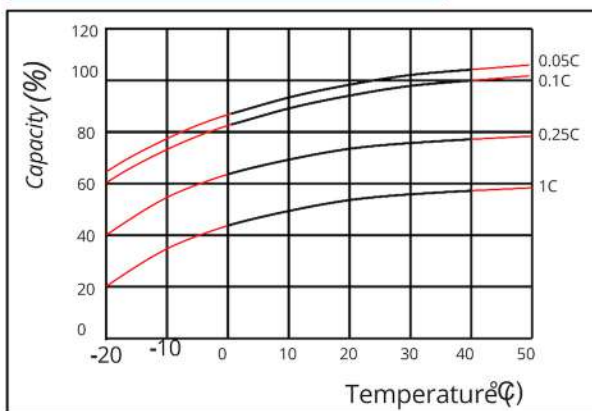
Discharge characteristics(25°C)



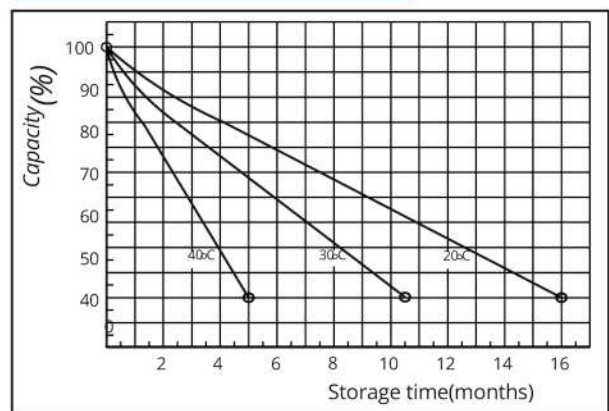
Charging characteristics (25°C)



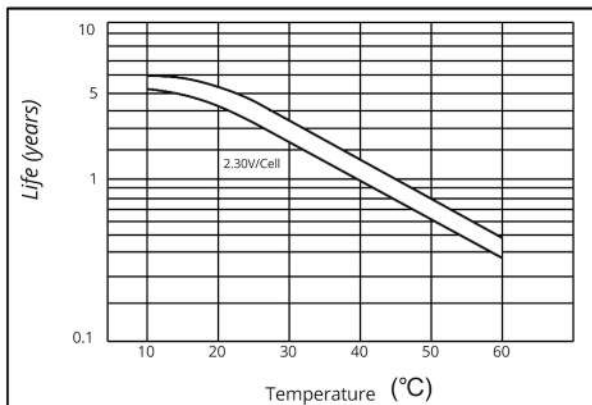
Effect of Temperature on Capacity



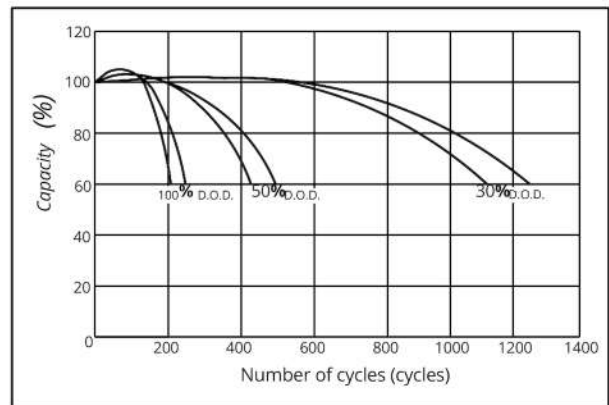
Self-discharge characteristics



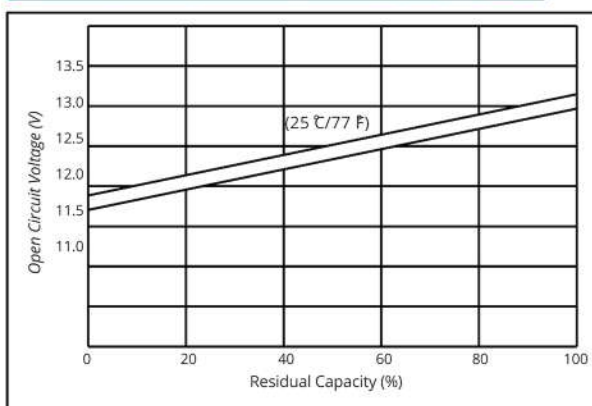
Floating Life on Temperature



Cycle service Life on D.O.D



The relationship for OCV and Capacity (25°C)



The relationship for Charging voltage and Temperature

