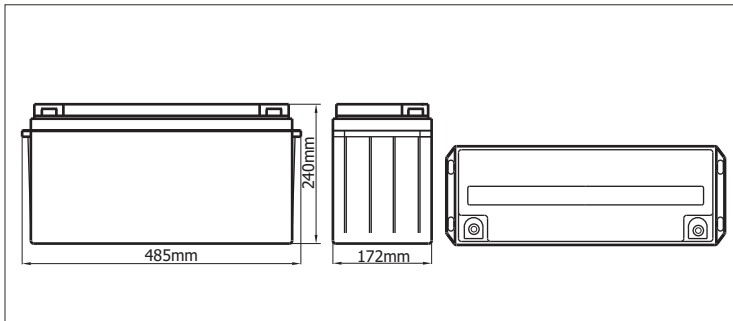
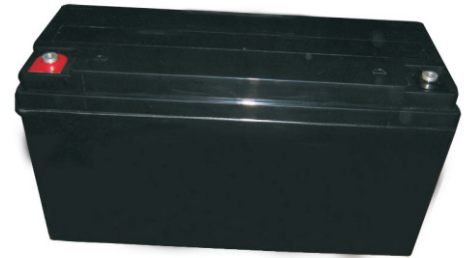


Model: **12HRL540**

**HRL Series**

The HRL range of VRLA batteries is perfectly suited to any application which requires a high rate current over a short period. In particular they are ideal for UPS systems thanks to their optimized performance and a patented post seal design. The rugged ABS container and flexible handles ensure that installation is also easily performed and trouble-free. A design life of 10 years completes the package.

**Dimensions—mm[inch]**



**Specifications**

Battery Model	12HRL540
Nominal Voltage	12V
Rated Capacity	540Wpc(15min rate, 1.67Vpc) ; 152Ah (10 hour rate,1.8Vpc) @25 °C(77 °F)
Typical Weight	45.6kg
Internal Resistance	Approx 4.0mΩ
Temperature Ranges	Operation (maximum) : -40°C to 55°C(-40°F to 131 °F)
	Operation (recommended) : 15°C to 25°C(59°F to 77 °F)
	Storage: -20 °C to 40°C(-4°F to 104 °F)
Float Voltage	2.27V/cell@25°C(77°F)
Recommended Maximum Charging Current Limit	40A
Equalize and Cycle Service	2.35V~2.40V@25°C(77°F)
Self Discharge	The residual capacity is above 87% after 90 days storage(25°C/77°F)
Terminal	M8 Female
Terminal Hardware Torque	10 ± 1.0Nm
Container Material	ABS (V0 optional)

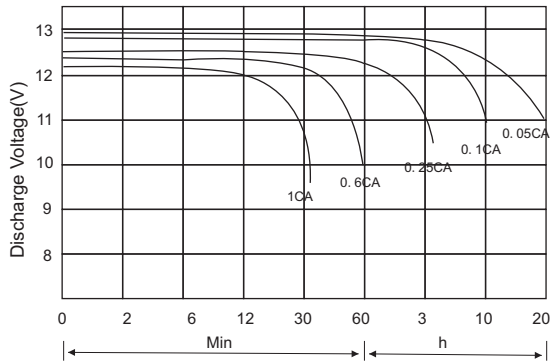
**Constant Current Discharge Characteristics Units: Amperes (25°C, 77°F)**

F.V/Time	5min	8min	10min	15min	20min	30min	45min	60min	90min
1.60V	446	396	352	304	241	174	123	97.3	77.5
1.67V	416	375	332	292	227	167	119	95.3	74.9
1.70V	404	366	321	284	221	164	117	93.7	73.5
1.75V	390	352	306	274	210	158	114	91.5	72.1
1.80V	373	338	288	265	203	152	110	89.4	70.9
1.85V	349	312	271	251	196	147	107	86.6	68.1

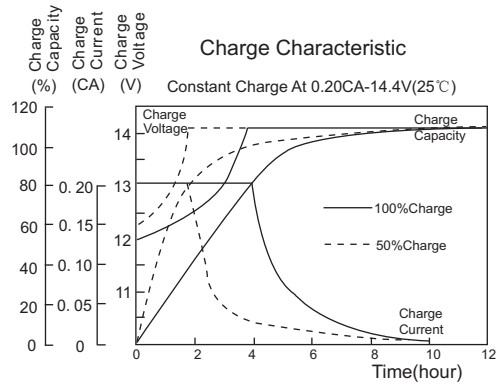
**Discharge Data with Constant Power Units: Watts per cell (25°C, 77°F)**

F.V/Time	5min	8min	10min	15min	20min	30min	45min	60min	90min
1.60V	784	707	631	556	443	323	228	181	145
1.67V	739	679	604	540	421	314	223	177	140
1.70V	722	661	588	530	413	309	220	176	139
1.75V	705	646	566	514	398	302	217	175	138
1.80V	681	620	540	500	386	292	212	172	137
1.85V	656	587	516	483	377	283	207	169	133

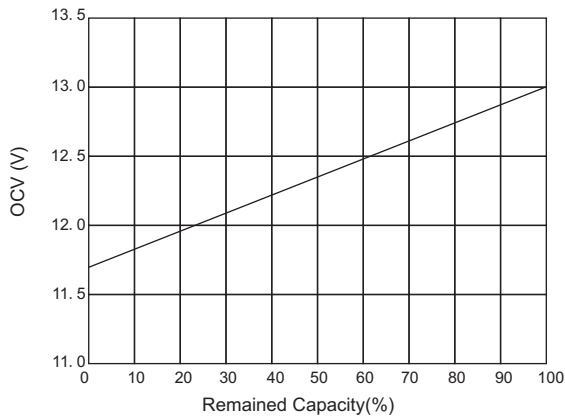
Terminal Voltage(V) Vs. Discharge Time (25° C, 77°F)



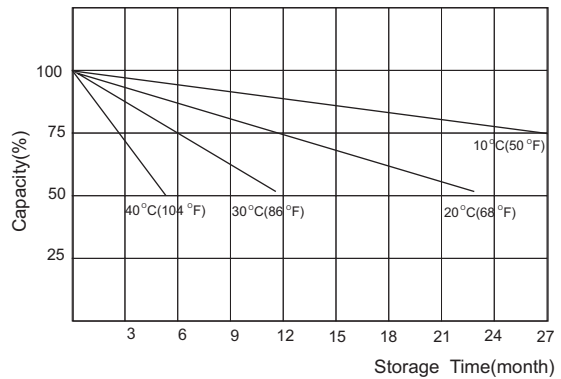
Battery Voltage Vs. Charge Time



Relationship of OCV Vs. State of Charge



Capacity Retention Characteristic



Charging Procedures

Application	Charge Voltage (V/Cell)			Max. Charge Current
	Temperature	Set Point	Allowable Range	
Cycle	25 °C	2.40	2.35~2.45	40A
Standby	25 °C	2.27	2.23~2.27	

Discharge Current VS. Discharge Voltage

Final Discharge Voltage V/Cell	1.80	1.70	1.55	1.30
Discharge Current (A)	$30A \geq I$	$30A < I < 75A$	$75A < I < 150A$	$I > 150A$

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