

stored energy solutions for a demanding world

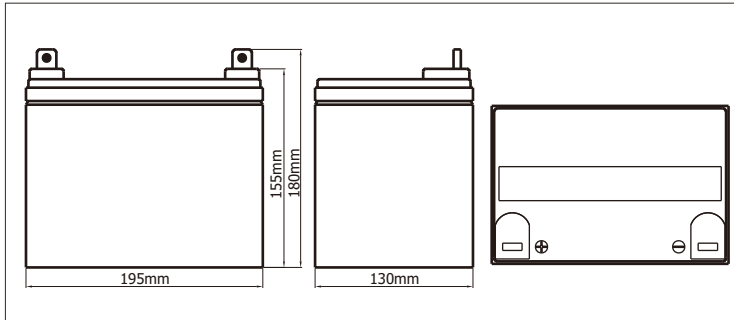


Model: 12HRL140

HRL Series

The HRL range of VRLA batteries with 12+ years design life is perfectly suited to any application which requires a high rate current over a short period. In particular they are ideal for IDC and UPS systems thanks to their optimized performance and a patented post seal design. Meanwhile with excellent uniform battery performance, long design life wide usage temperature range, HRL series are suit for high ambient temperature.

Dimensions—mm[inch]



Specifications

Battery Model	12HRL140	
Nominal Voltage	12V	
Rated Capacity	140 W/cell(15 minute rate, 1.67 V/cell) and 34Ah(20 hr to 1.80V/cell)	@25°C(77°F)
Typical Weight	10.7kg	
Internal Resistance	Approx 10.0mΩ	
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	10A	
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	M5 Terminal	
Terminal Hardware Torque	6 ± 1.0Nm	
Container Material	ABS (V0 optional)	

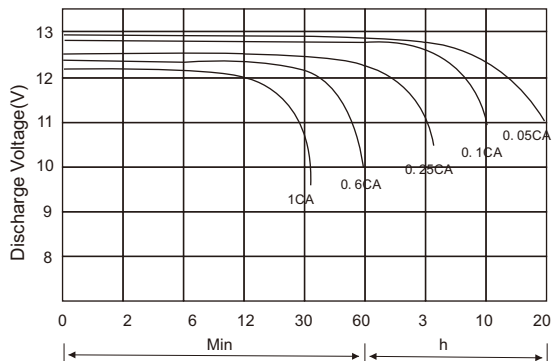
Constant Current Discharge Characteristics Units: Amperes (25°C, 77°F)

End voltage per cell	5min	10min	15min	20min	30min	40min	50min	1h	2h	3h	4h	5h	6h	8h	10h
1.60V	120	94.7	82.7	64.6	46.4	37.3	30.5	23.0	13.4	9.01	7.31	6.13	5.27	4.21	3.67
1.67V	112	89.2	79.5	60.9	44.7	36.5	29.5	22.8	13.2	8.91	7.24	6.10	5.23	4.14	3.63
1.70V	109	86.3	77.2	59.2	43.9	35.8	29.0	22.6	13.1	8.84	7.21	6.03	5.20	4.10	3.55
1.75V	105	82.3	74.5	56.4	42.3	35.1	28.3	22.4	13.0	8.73	7.14	5.96	5.09	4.03	3.45
1.80V	100	77.3	72.2	54.6	40.6	34.3	28.1	21.5	12.8	8.59	6.90	5.75	5.02	3.99	3.30
1.85V	93.8	72.7	68.3	52.6	39.2	33.8	27.5	21.0	12.1	8.42	6.72	5.47	4.75	3.81	3.20
1.90V	71.2	54.7	49.3	44.7	34.6	28.0	23.9	19.0	11.5	7.76	6.03	5.06	4.30	3.56	3.07

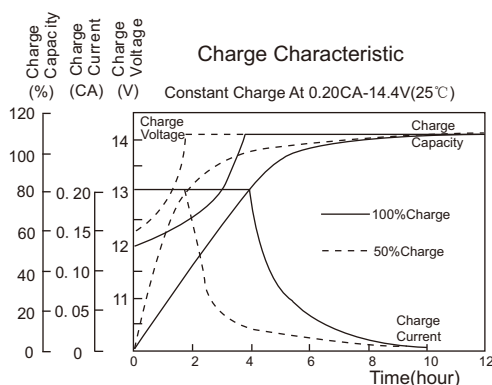
Discharge Data with Constant Power Units: Watts per cell (25°C, 77°F)

End voltage per cell	5min	10min	15min	20min	30min	40min	50min	1h	2h	3h	4h	5h	6h	8h	10h
1.60V	202	163	145	119	86.3	65.7	53.8	41.1	24.3	16.5	13.6	11.4	9.88	7.91	6.94
1.67V	191	156	140	113	83.9	64.9	53.1	40.6	24.2	16.4	13.4	11.4	9.82	7.80	6.91
1.70V	186	152	138	111	82.7	64.2	52.3	40.3	24.0	16.3	13.4	11.3	9.77	7.76	6.87
1.75V	182	146	134	107	80.7	63.4	51.6	39.7	24.3	16.5	13.2	11.3	9.68	7.70	6.83
1.80V	176	139	131	104	78.0	63.0	51.9	39.1	23.9	16.1	12.9	10.9	9.55	7.63	6.61
1.85V	169	133	126	101	75.7	62.7	51.2	37.8	22.7	15.9	12.8	10.5	9.05	7.31	6.35
1.90V	125	101	96.8	83.1	64.6	52.3	44.9	36.1	21.7	14.8	11.5	9.68	8.21	6.86	5.99

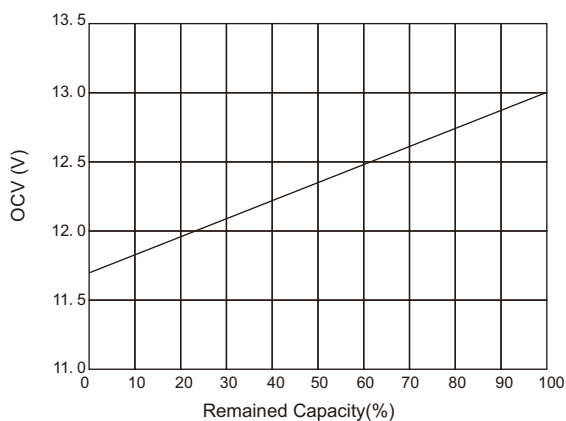
Terminal Voltage(V) Vs. Discharge Time (25°C, 77°F)



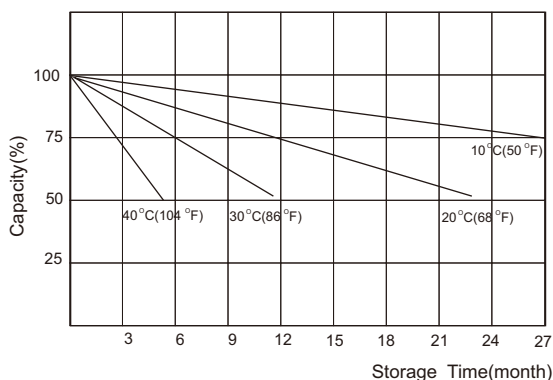
Battery Voltage Vs. Charge Time



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	10A
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)	10A ≥ I	10A < I < 25A	25A < I < 50A	I > 50A

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