

# stored energy solutions for a demanding world

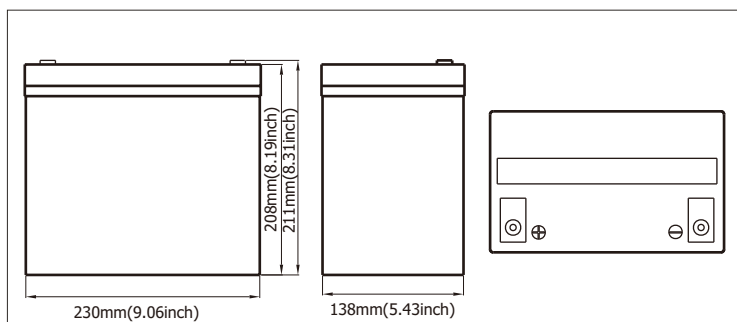


## Model: 12HRL200

## 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	12HRL200
Nominal Voltage	12V
Rated Capacity	200 W/cell(15 minute rate, 1.75 V/cell) and 55Ah(10 hr to 1.80V/cell)@25°C(77°F)
Typical Weight	17.5kg
Internal Resistance	Approx 8.0mΩ
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	15A
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	M6 Female
Terminal Hardware Torque	10 ± 1.0Nm
Container Material	ABS (V0 optional)

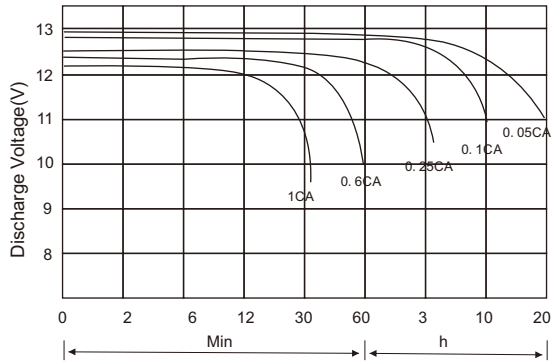
### Constant Current Discharge Characteristics Units: Amperes (25°C, 77°F)

End voltage per cell	5min	10min	15min	20min	30min	40min	50min	1h	2h	3h	4h	5h	6h	8h	10h
1.60V	171	135	118	92.3	66.3	53.3	43.5	36.6	21.2	14.3	11.6	9.74	8.36	6.68	5.83
1.67V	160	127	114	86.9	63.9	52.2	42.2	36.2	21.0	14.1	11.5	9.68	8.31	6.57	5.76
1.70V	155	123	110	84.6	62.8	51.2	41.4	35.9	20.8	14.0	11.4	9.57	8.25	6.51	5.72
1.75V	150	118	106	80.6	60.5	50.1	40.5	35.5	20.6	13.9	11.3	9.46	8.09	6.40	5.64
1.80V	143	110	103	78.0	57.9	49.0	40.1	34.1	20.2	13.6	10.9	9.13	7.98	6.34	5.50
1.85V	134	104	97.5	75.2	56.0	48.2	39.2	33.3	19.2	13.4	10.7	8.69	7.54	6.05	5.23
1.90V	102	78.1	70.4	63.8	49.4	40.0	34.1	30.2	18.2	12.3	9.57	8.03	6.82	5.66	4.88

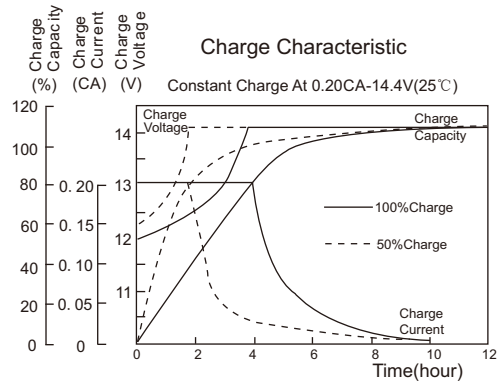
### Discharge Data with Constant Power Units: Watts per cell (25°C, 77°F)

End voltage per cell	5min	10min	15min	20min	30min	40min	50min	1h	2h	3h	4h	5h	6h	8h	10h
1.60V	301	242	216	170	123	93.8	76.9	65.2	38.6	26.2	21.5	18.1	15.7	12.5	11.0
1.67V	284	232	210	162	120	92.8	75.8	64.5	38.4	26.1	21.3	18.1	15.6	12.4	11.0
1.70V	277	226	206	158	118	91.7	74.7	64.0	38.1	25.9	21.3	17.9	15.5	12.3	10.9
1.75V	271	217	200	153	115	90.6	73.7	63.0	38.6	26.1	21.0	17.9	15.4	12.2	10.8
1.80V	262	207	194	148	111	90.0	74.2	62.0	38.0	25.5	20.5	17.3	15.2	12.1	10.5
1.85V	252	198	188	145	108	89.6	73.1	60.0	36.1	25.2	20.3	16.6	14.4	11.6	10.1
1.90V	187	150	144	119	92.2	74.7	64.1	57.2	34.4	23.4	18.2	15.4	13.0	10.9	9.50

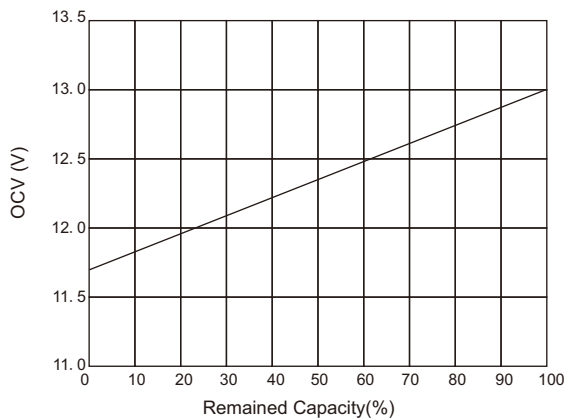
Terminal Voltage(V) Vs. Discharge Time (25°C, 77°F)



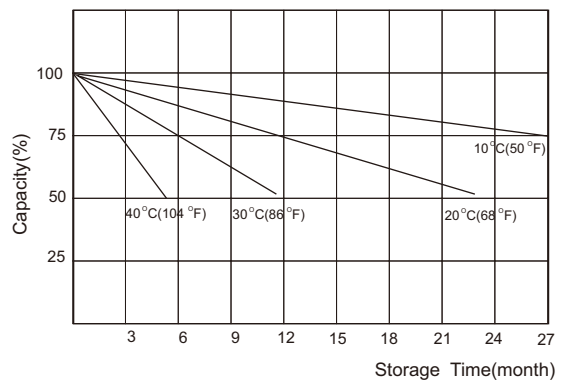
Battery Voltage Vs. Charge Time



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	15A
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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