



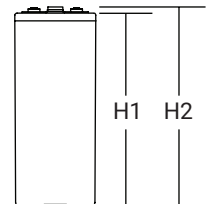
# VRZ Series - Tubular Gel Batteries

## 5 OPzV-ET 250

2V 280Ah @ 10hr

Construction							
Nominal Voltage	2V						
Number of Cells	1						
Design Life	20 years						
Nominal Capacity 20°C (68°F)	<table border="0"> <tr> <td>10 hour rate (28A, 1.8V)</td> <td>280Ah</td> </tr> <tr> <td>5 hour rate (51A, 1.75V)</td> <td>255Ah</td> </tr> <tr> <td>1 hour rate (155A, 1.6V)</td> <td>155Ah</td> </tr> </table>	10 hour rate (28A, 1.8V)	280Ah	5 hour rate (51A, 1.75V)	255Ah	1 hour rate (155A, 1.6V)	155Ah
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1 hour rate (155A, 1.6V)	155Ah						
Internal Resistance	Fully Charged Battery 20°C (68°F) 0.79mOhm						
Self-Discharge	2% of capacity declined per month at 20°C (average)						
Operating Temperature Range	-20°C to +55°C						
Maximum Discharge Current 20°C (68°F)	434A						
Charge Methods: Constant Voltage Charge 20°C (68°F)	<table border="0"> <tr> <td>Cycle use: 2.40V (time limited)</td> <td>Maximum charging current: 140A</td> </tr> <tr> <td>Standby use: 2.25V ± 1%</td> <td>Temperature compensation: -3.5mV/°C/Cell</td> </tr> <tr> <td>Terminal torque: 23Nm</td> <td></td> </tr> </table>	Cycle use: 2.40V (time limited)	Maximum charging current: 140A	Standby use: 2.25V ± 1%	Temperature compensation: -3.5mV/°C/Cell	Terminal torque: 23Nm	
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Battery Specifications				
Length (in.)	Width (in.)	Height: H1 (in.)	Total Height: H2 (in.)	Approx. Weight (lb.)
4.96	8.19	14.17	14.76	47.53



## Features

- High capacity density
- Robust tubular positive electrode design, compliant with DIN 40742
- Low self discharge rate allows for up to 2 years shelf life
- Operating temperature -20°C to +55°C
- 20 year float life at 20°C (68°F)
- EUROBAT design life: Long Life > 12 years
- Fully recyclable with low CO<sub>2</sub> footprint

## Applications

- Telecommunications/ Mobile Phone Stations
- Traffic Systems
- UPS Systems
- Emergency Lighting
- Electrical Switching



Compliant with: IEC60896-21/22



### Discharge Constant Current (Amperes at 20°C)

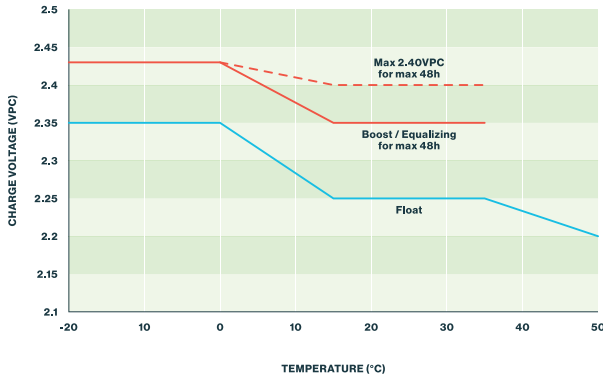
Cells (V)	10 min	15 min	30 min	1h	2h	3h	5h	8h	10h
1.60	434.0	377.5	279.5	154.9	103.8	77.0	50.8	34.3	28.8
1.65	392.5	348.4	267.1	154.9	103.8	77.0	50.8	34.3	28.8
1.70	356.2	324.5	253.2	148.8	102.4	77.0	50.8	34.3	28.8
1.75	320.1	299.9	223.5	143.6	100.4	75.8	50.8	34.6	28.8
1.80	288.7	257.6	195.4	124.3	92.7	72.2	48.7	33.0	28.0
1.83	259.6	226.0	183.9	118.3	88.6	67.3	47.4	32.4	27.7
1.85	241.3	212.6	170.3	113.9	84.9	64.7	45.0	30.9	26.6
1.87	216.1	194.9	154.9	104.7	80.9	62.0	43.5	30.5	25.6
1.90	180.4	157.9	134.1	95.6	74.7	57.3	39.0	26.8	22.9

### Discharge Constant Power (Watts at 20°C)

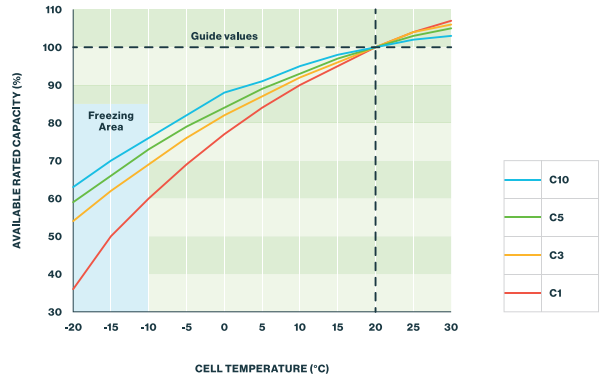
Cells (V)	10 min	15 min	30 min	1h	2h	3h	5h	8h	10h
1.60	710.7	618.1	475.5	276.4	192.3	144.2	96.2	64.7	54.7
1.65	657.6	583.7	457.2	276.2	192.3	144.2	96.2	64.7	54.7
1.70	610.4	556.1	441.0	267.1	189.4	144.2	96.2	64.7	54.7
1.75	562.9	527.4	397.6	259.8	186.3	141.7	96.4	65.2	54.7
1.80	520.6	464.6	355.1	228.8	172.6	135.8	92.4	62.6	53.1
1.83	476.9	415.3	339.3	220.7	166.7	127.6	90.1	61.7	53.1
1.85	446.2	393.0	317.3	213.5	160.3	122.8	85.9	58.8	50.7
1.87	403.7	364.0	291.9	197.3	154.0	118.2	83.4	58.8	48.9
1.90	344.4	301.6	255.3	182.5	143.7	111.1	76.0	51.8	44.6



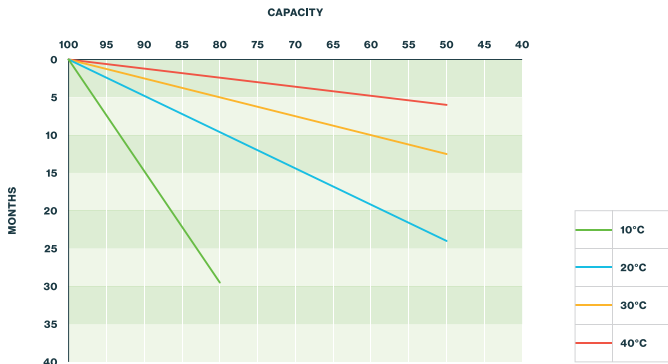
### Charging voltage vs. Temperature



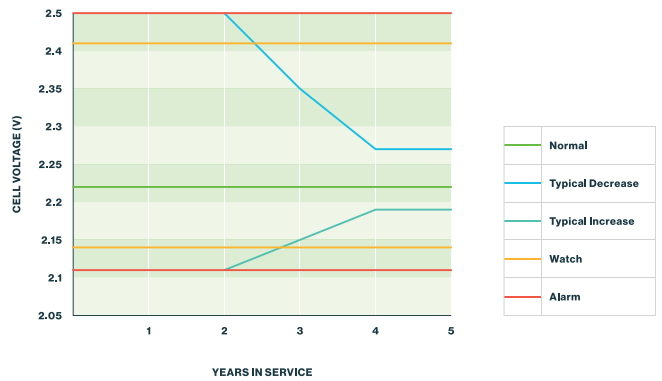
### Capacity vs. Temperature



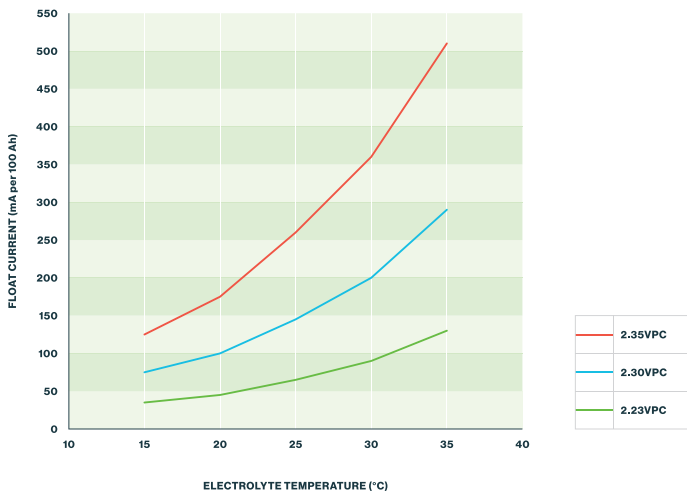
### Self discharge at different temperatures



### Float voltage deviation vs. Years in service



### Float current: Residual charge current



### Storage: Determine the state of charge

