



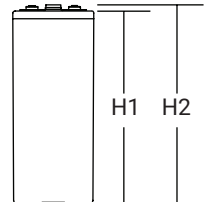
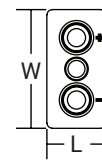
# VRZ Series - Tubular Gel Batteries

7 OPzV-ET 490

2V 580Ah @ 10hr

Construction	
Nominal Voltage	2V
Number of Cells	1
Design Life	20 years
Nominal Capacity 20°C (68°F)	10 hour rate (58A, 1.8V)      580Ah 5 hour rate (113A, 1.75V)    565Ah 1 hour rate (334A, 1.6V)       334Ah
Internal Resistance	Fully Charged Battery 20°C (68°F)      0.47mOhm
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)	771A
Charge Methods: Constant Voltage Charge 20°C (68°F)	Cycle use: 2.40V (time limited)      Maximum charging current: 290A Standby use: 2.25V ± 1%              Temperature compensation: -3.5mV/°C /Cell Terminal torque: 23Nm

Battery Specifications				
Length (in.)	Width (in.)	Height: H1 (in.)	Total Height: H2 (in.)	Approx. Weight (lb.)
6.61	8.19	18.70	19.29	88.85



## 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)

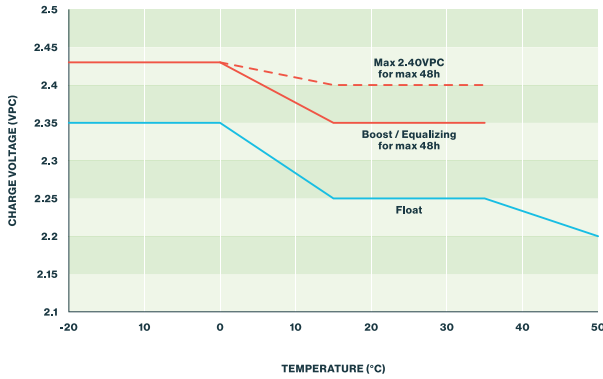
Cells (V)	10 min	15 min	30 min	1h	2h	3h	5h	8h	10h
1.60	771.3	709.8	534.0	333.6	195.5	162.0	114.2	74.1	59.8
1.65	737.9	681.6	515.4	329.5	195.5	162.0	114.2	74.1	59.8
1.70	653.0	592.6	466.0	324.4	195.3	161.9	114.1	74.1	59.7
1.75	590.4	542.5	418.9	316.5	189.9	156.2	113.0	73.4	59.2
1.80	582.9	521.4	390.3	280.1	189.7	152.0	110.8	71.3	58.0
1.83	488.3	414.4	369.9	260.9	175.8	147.9	104.4	71.0	57.2
1.85	462.5	405.6	346.9	245.4	172.6	145.0	101.5	69.4	56.4
1.87	463.0	396.1	333.5	227.4	171.4	138.2	96.9	66.9	54.4
1.90	341.0	322.6	261.2	199.9	159.0	130.4	91.0	62.4	51.1

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

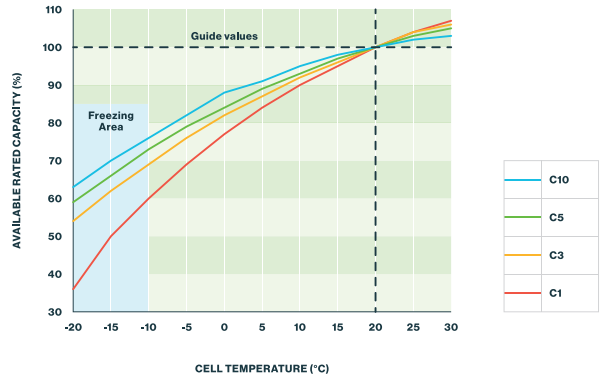
Cells (V)	10 min	15 min	30 min	1h	2h	3h	5h	8h	10h
1.60	1248.0	1148.4	885.6	586.7	358.5	301.7	215.9	142.2	114.4
1.65	1226.4	1133.0	870.7	576.6	358.5	301.7	215.9	142.2	114.4
1.70	1116.1	1013.0	804.2	573.1	358.1	301.5	215.9	142.1	114.3
1.75	1035.8	951.7	740.8	569.7	349.8	289.6	213.6	140.7	113.1
1.80	1051.3	940.4	706.1	512.7	351.5	285.9	209.7	135.9	111.1
1.83	894.1	758.7	679.2	484.5	329.2	278.4	198.7	136.1	110.3
1.85	856.9	751.4	644.6	457.7	326.4	274.5	194.5	133.5	108.0
1.87	862.5	737.8	625.6	429.5	326.4	265.5	186.5	128.8	105.5
1.90	637.6	603.2	497.3	380.8	305.7	251.7	176.3	120.7	100.0



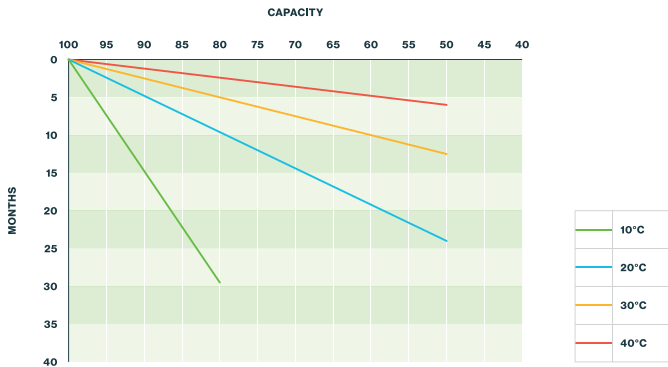
### Charging voltage vs. Temperature



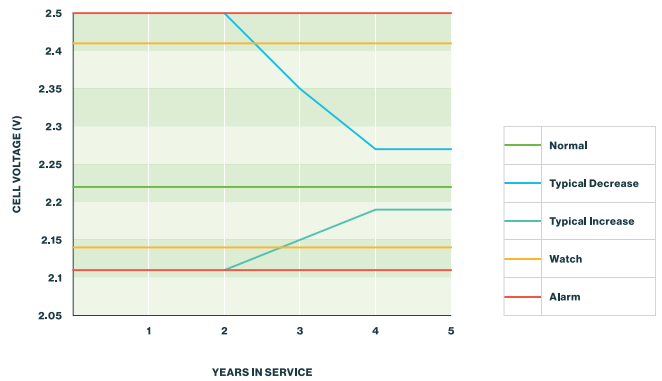
### Capacity vs. Temperature



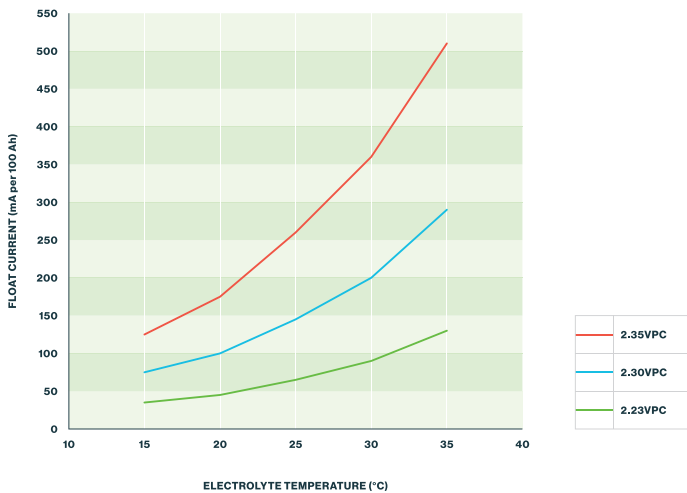
### Self discharge at different temperatures



### Float voltage deviation vs. Years in service



### Float current: Residual charge current



### Storage: Determine the state of charge

