

APPLICATION NOTE

Measuring Jars with Multiple Cells using PowerDB

A battery consists of a jar that can contain multiple cells. When performing battery testing, it is recommended to take measurement on the individual cell if possible. However, with most batteries it is only possible to take measurements on the jar. Since this is the smallest unit that can be replaced, this makes sense. Yet some batteries that have multiple cells also have multiple posts that allow for the measurements of the cells within the jar. For this reason we allow PowerDB to be configured for this application.

In the “String” section of the report, the number of jars and cells can be selected. When the smallest unit of measure is the jar then these numbers will be equal, as shown below.

STRING		BATTERY TYPE: <input type="text"/>		NUMBER OF JARS: <input type="text" value="20"/>
STRING NAME: <input type="text" value="Test"/>	INSTALLATION DATE: <input type="text"/>	DUTY CYCLE: <input type="text" value="Amps"/>	NUMBER OF CELLS: <input type="text" value="20"/>	
HYDROMETER. START/SKIP CELLS: <input type="text" value="1"/> / <input type="text" value="0"/>		for <input type="text" value="Minutes"/>	NUMBER OF CELLS / JAR: <input type="text" value="1"/>	
VOLTS PER CELL: NOMINAL: <input type="text"/>		to <input type="text"/> VPC	NUMBER OF STRAPS: <input type="text" value="20"/>	

This will produce a report that looks like the following:

Table Summary		Total String Voltage Divisor: <input type="text" value="1"/>	Display Impedance: <input type="text" value="Milli-Ohms"/>	Specific Gravity Table Style: <input type="text" value="One Reading Per Jar"/>		
Baseline Impedance	Avg. Impedance	Total String Voltage	Total String Voltage Dev. from Charger	Min. Voltage	Max. Voltage	Avg. Temp
1.32694	1.34	133.79	100.0 %	6.62	6.79	

JAR DATA						CELL DATA					
#	NOTES	IMPEDANCE (milli-ohms)				VOLTAGE (volts)	TIME	MODEL	#	Hydrometer	
		VALUE	% DEVIATION (Baseline)	% VARIATION (String)	% CHANGE (Prev.)					SPECIFIC GRAVITY	TEMP.
1		1.316	-0.8	-1.5	-16.6	6.650	10:47		1		
2		1.328	0.1	-0.6	-0.1	6.650	10:47		2		
3		1.304	-1.7	-2.4	-0.9	6.670	10:48		3		
4		1.316	-0.8	-1.5	-26.5	6.670	10:48		4		
5		1.328	0.1	-0.6	-1	6.670	10:48		5		
6		1.339	0.9	0.2	-1	6.650	10:49		6		
7		1.363	2.7	2.0	-0.9	6.700	10:49		7		
8		1.339	0.9	0.2	-0.1	6.720	10:49		8		
9		1.339	0.9	0.2	-1	6.670	10:50		9		
10		1.351	1.8	1.1	-1	6.740	10:50		10		

If you have a jar with multiple cells and you can choose to measure the multiple cells then you can configure PowerDB for this application. In the example below, assume there are 20 single jars that contain three cells each, or 60 cells. Therefore, configure the “String” section of the report in this manner.

STRING		BATTERY TYPE: <input type="text"/>		NUMBER OF JARS: <input type="text" value="20"/>
STRING NAME: <input type="text" value="Test"/>	INSTALLATION DATE: <input type="text"/>	DUTY CYCLE: <input type="text" value="Amps"/>	NUMBER OF CELLS: <input type="text" value="60"/>	
HYDROMETER. START/SKIP CELLS: <input type="text" value="1"/> / <input type="text" value="0"/>		for <input type="text" value="Minutes"/>	NUMBER OF CELLS / JAR: <input type="text" value="3"/>	
VOLTS PER CELL: NOMINAL: <input type="text"/>		to <input type="text"/> VPC	NUMBER OF STRAPS: <input type="text" value="20"/>	

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This will produce a report that looks like the following:

Table Summary							Total String Voltage Divisor: 1	Display Impedance: Milli-Ohms	Specific Gravity Table Style: One Reading Per Jar		
Baseline Impedance	Avg. Impedance	Total String Voltage	Total String Voltage Dev. from Charger		Min. Voltage	Max. Voltage	Avg. Temp				
1.32694	1.34	133.79	100.0	%	6.62	6.79					
CELL DATA								JAR DATA			
#	NOTES	IMPEDANCE (milli-ohms)				VOLTAGE (volts)	TIME	MODEL	#	Hydrometer	
		VALUE	% DEVIATION (Baseline)	% VARIATION (String)	% CHANGE (Prev.)					SPECIFIC GRAVITY	TEMP: °F to °C / °C to °F
1		1.316	-0.8	-1.5	-16.6	6.650	10:47		1		
		1.328	0.1	-0.6	-0.1	6.650	10:47				
		1.304	-1.7	-2.4	-0.9	6.670	10:48				
2		1.316	-0.8	-1.5	-26.5	6.670	10:48		2		
		1.328	0.1	-0.6	-1	6.670	10:48				
		1.339	0.9	0.2	-1	6.650	10:49				
3		1.363	2.7	2.0	-0.9	6.700	10:49		3		
		1.339	0.9	0.2	-0.1	6.720	10:49				
		1.339	0.9	0.2	-1	6.670	10:50				

This allows you to take the measurements of the individual cells within the jar.