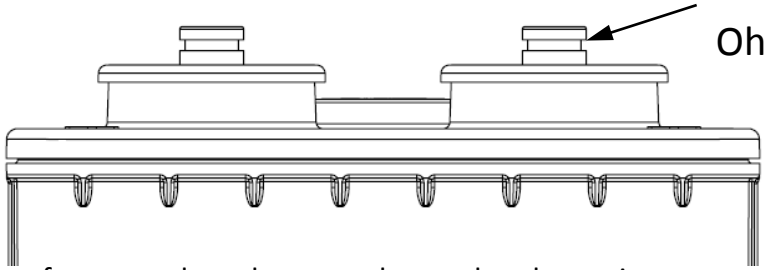
Ohmic Reference Values
Current VRLA Products

Note: Values contained within this document are approximate and may vary up to +/- 20%. These values are to be used for reference only and cannot be used for a warranty claim. Upon installation, initial readings should be taken and used as a reference for subsequent maintenance. Capacity testing should be performed to confirm abnormal readings. Values are subject to change without notification.

msEndur II (AT-P) Ohmic Reference Values
Standard Specific Gravity Cells

Model Number	Midtronics Conductance Mhos	Biddle Impedance milli-ohms
AT-07P	1284*	587
AT-09P	1861*	495
AT-11P	2270	421
AT-13P	2605	370
AT-15P	2975	321
AT-17P	3305	287
AT-19P	3670	255
AT-21P	4015	231
AT-23P	4350	212
AT-25P	4720	194
AT-27P	5075	181
AT-29P	5420	171
AT-35P	6480	148
AT-39P	7175	142
*Values have been updated. See final page for past data.		

msEndurII cells have an Ohmic Ring on each post to be used for taking Impedance and Conductance values.

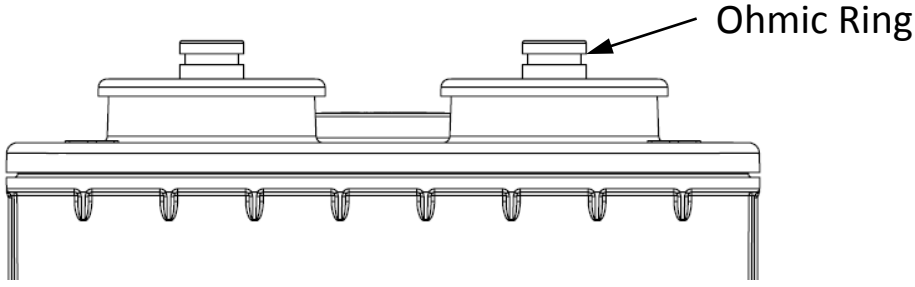


Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

msEndur II (ATL-P) Ohmic Reference Values
Reduced Specific Gravity Cells

Model Number	Midtronics Conductance Mhos
ATL-07P	1284
ATL-09P	1861
ATL-11P	2270
ATL-13P	2605
ATL-15P	2975
ATL-17P	3305
ATL-19P	3670
ATL-21P	4015
ATL-23P	4350
ATL-25P	4720
ATL-27P	5075
ATL-29P	5420
ATL-35P	6480
ATL-39P	7175

msEndurII cells have an Ohmic Ring on each post to be used for taking Impedance and Conductance values.



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Liberty MSE Ohmic Reference Values*

Model Number	Midtronics Conductance Mhos
100LF17	2500
100LF19	2750
100LF21	2975
100LF23	3210
100LF25	3455
100LF27	3675
100LF29	3915
100LF31	4150
100LF33	4400

*These values are based on limited data and will be updated as additional data becomes available.

Ohmic readings should always be taken from the battery post. If this is not possible, readings can be taken from a consistent location on connectors, but never from the terminal hardware.

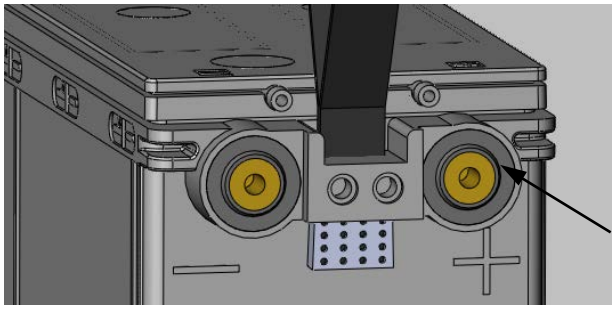
Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

C&D TRUE FRONT ACCESS®

TEL Series True Front Access
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
TEL12-105FNS/FNSG	1050	No Data	No Data
TEL12-105FS	1300*	4450	3.33
TEL12-115FN/FNG	1090	No Data	No Data
TEL12-145FW	1700	No Data	No Data
TEL12-155F/FG	1120	No Data	No Data
TEL12-160FW	1780*	3340	2.68
TEL12-160F	1430*	3940	3.14
TEL12-170F/FG	1400	No Data	No Data
TEL12-180F	1510	4260	3.66
TEL12-190F/FG	1450	No Data	No Data
TEL12-210F/FG	1500	No Data	No Data
*Values have been updated. See final page for past data.			

True Front Access models have an Ohmic Ring surrounding each post to be used for taking Impedance and Conductance values.



Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

LONG DURATION SERIES

TEL Long Duration Series
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
TEL12-30	752	8304	6.64
TEL12-45	858	7243	5.75
TEL12-70	1326	5567	3.95
TEL12-80	1467	4707	3.50
TEL12-90	1546	4664	3.39
TEL12-125	1747	4252	3.07
TEL12-105FS	1300*	4450	3.33
TEL6-180	2030	No Data	No Data
*Values have been updated. See final page for past data.			

Ohmic readings should always be taken from the battery post. If this is not possible, readings can be taken from a consistent location on connectors, but never from the terminal hardware.

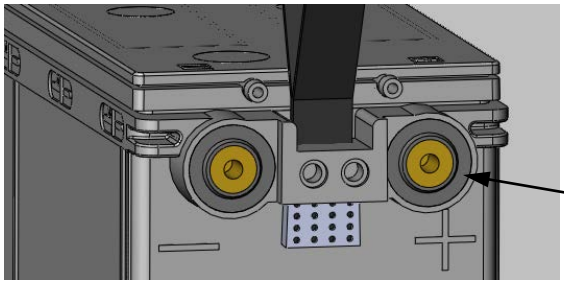
Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

HIGH RATE MAX

High Rate Max
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
UPS12-100MR	603	10572	8.52
UPS12-150MR	1007	6412	4.86
UPS12-210MR	1138	5900	4.44
UPS12-300MR	1669	4261	3.06
UPS12-350MR	1914	3854	2.76
UPS12-400MR	2079	3517	2.44
UPS12-490MRLP	2222	3000	2.18
UPS12-490MR	1844	3952	2.92
UPS12-540MR	2032	3561	2.51
UPS6-620MR	2098	No Data	No Data

"MRF" models have an Ohmic Ring surrounding each post to be used for taking Impedance and Conductance values.



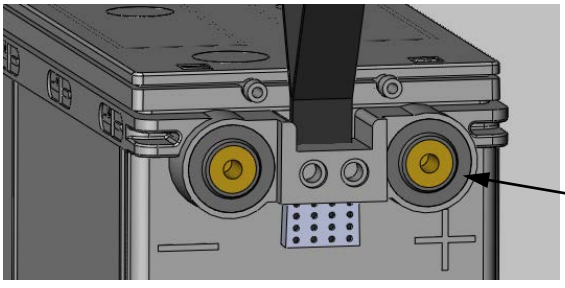
Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

HIGH RATE MAX

High Rate Max Front Access
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
UPS12-355MRF	1090	No Data	No Data
UPS12-615MRF	2400	No Data	2.30
UPS12-700MRF	2500	3480	2.40
UPS12-745MRF	3350	No Data	No Data
UPS12-1000MRXF	3300	No Data	No Data

True Front Access models have an Ohmic Ring surrounding each post to be used for taking Impedance and Conductance values.



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BROAD-
BAND
SERIES

Broadband Series (BBG)
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
BBG85GXL	600	11418	8.05
BBA-160RT	1300	No Data	No Data
BBG165G	1093	6216	4.93
BBG180GXL	1029	6636	5.29
BBG210GXL	1174	6067	4.69

Ohmic readings should always be taken from the battery post. If this is not possible, readings can be taken from a consistent location on connectors, but never from the terminal hardware.

Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

DEEP CYCLE SERIES

Deep Cycle Series (DCS)
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
DCS-33	784	7971	6.5
DCS-50	916	7237	5.93
DCS-75	1328	4882	4.06
DCS-88	1592	4316	3.25
DCS-100	1515	4520	3.49

Ohmic readings should always be taken from the battery post. If this is not possible, readings can be taken from a consistent location on connectors, but never from the terminal hardware.

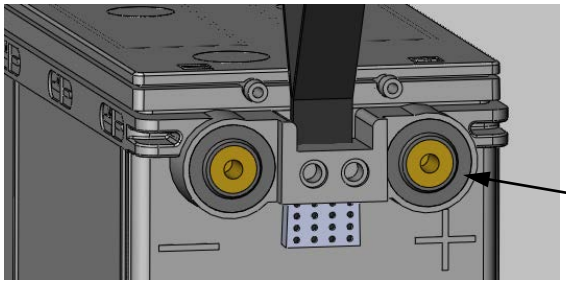
Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

VR SOLAR

VR Solar (VRS)
Ohmic Reference Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
VRS12-33	784	7971	6.5
VRS12-50	916	7237	5.93
VRS12-75	1328	4882	4.06
VRS12-88	1592	4316	3.25
VRS12-100	1515	4520	3.49
VRS12-155F	No Data	No Data	No Data
VRS12-175F	No Data	No Data	No Data

"F" models have an Ohmic Ring surrounding each post to be used for taking Impedance and Conductance values.



Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

Liberty SERIES® 1000

Liberty 1000 Series
Ohmic Reference Values

Model Number	Midtronics Conductance Mhos
LS12-100	1600
LS6-200	2700
LS4-300	2300
LS2-600	2300

Ohmic readings should always be taken from the battery post. If this is not possible, readings can be taken from a consistent location on connectors, but never from the terminal hardware.

Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.

C&D TECHNOLOGIES

Current Products
Previous Values

Meter Type	Midtronics	Alber	AVO Biddle
Model Number	Mhos	micro-Ohms	milli-Ohms
TEL12-105F/FS	1590		
TEL12-160F	1750		
TEL12-160FW	2170		
AT-07P	1570		
AT-09P	1910		

As new data is collected, reference values are sometimes updated to ensure the most complete and accurate information is available. Values shown on this table have been replaced by updated data that can be found on the product page within this document.

Note: Values are for reference only and may not be used to determine a warranty claim. Initial readings may vary +/- 20% from these reference values. Information is subject to change without notice.