

Fluke 500 Series Battery Analyzers



Intelligent test probe with integrated LCD display

Technical Data

Reduced testing complexity, a simplified workflow and an intuitive user interface provide a new level of ease-of-use in battery testing.

The new Fluke 500 Series Battery Analyzer is ideal test tool for maintenance, troubleshooting and performance testing of individual stationary batteries and battery banks used in critical battery back-up applications. The intuitive user interface, compact design and rugged construction ensure optimum performance, test results and reliability. Fluke 500 Series Battery Analyzers cover a broad range of battery test functions ranging from DC voltage and resistance tests to full condition testing using an automated string function testing and the test probe integrated infra-red temperature measurement system. 500 Series Battery Analyzers are designed

- **Key measurements:** Battery resistance, dc and ac voltage, dc and ac current, ripple voltage, frequency and battery temperature.
- **Sequence measurement mode:** Automatic or manual sequence testing of battery strings with automatic measurement storage including voltage, resistance and temperature (with BTL21 intelligent test probe).
- **Comprehensive logging:** All measured values are automatically captured during testing and can be reviewed on the instrument before downloading for on-the-go analysis.
- **Optimized user interface:** Quick, guided setup ensures you're capturing the right data every time, and the combined visual and audio feedback cues reduce the risk of measurement confusion.
- **Threshold comparison:** Configure multiple reference values and thresholds for resistance and voltage. Comparison result feedback after each measurement via visual and verbal cues.
- **Ergonomic test leads:** Rugged coaxial two pole kelvin test pins with remote SAVE button reduce test time and increase efficiency.
- **Test probe extenders:** Long reach probes for double stacked cells.
- **Intelligent test probe set (BT520 and BT521):** Integrated LCD display, infrared temperature measurement (BT521 only), flashlight, verbal audio feedback and captures voltage readings and temperature logging automatically or via integrated save button.
- **Enhanced data analysis:** Quickly compare trends, analyze results and create reports with included battery management software.
- **Easy reporting:** Generate PDF report on the PC software with analysis graphics and data table or quick email format report with csv file on the mobile app.
- **Wireless communication:** For data download and remote display while measuring. Browse and email measurement data via iOS app.
- **Battery life:** 7.4 V 3000 mAh lithium-ion battery for more than eight hours continuous operation.
- **USB port:** For fast data download to supplied data analysis and report management application software.

Specifications

Functions	Range	Resolution	Accuracy	BT508	BT510	BT520	BT521
Battery resistance ¹	3 mΩ	0.001 mΩ	1 % + 8	•	•	•	•
	30 mΩ	0.01 mΩ	0.8 % + 6	•	•	•	•
	300 mΩ	0.1 mΩ	0.8 % + 6	•	•	•	•
	3000 mΩ	1 mΩ	0.8 % + 6	•	•	•	•
Vdc	6 V	0.001 V	0.09 % + 5	•	•	•	•
	60 V	0.01 V	0.09 % + 5	•	•	•	•
	600 V	0.1 V	0.09 % + 5	•	•	•	•
	1000 V	1 V	0.09 % + 5				•
Vac (45 Hz to 500 Hz with 800 Hz filter)	600 V	0.1 V	2 % + 10		•	•	•
Frequency (displayed with Vac and Aac) ²	500 Hz	0.1 Hz	0.5 % + 8		•	•	•
AC voltage ripple (20 KHz Max)	600 mV	0.1 mV	3 % + 20		•	•	•
	6000 mV	1 mV	3 % + 10		•	•	•
Adc/Aac (with accessory Fluke i410)	400 A	1 A	3.5 % + 2				•
Temperature	0 °C to 60 °C	1 °C	2 °C (4 °F)				•
Meter mode	999 records for each measurement position with time stamp						
Sequence mode	Up to 100 profiles and 100 profile templates (Each profile stores up to 450 batteries) with time stamp						

¹The measurement is based on ac injection method. The injected source signal is <100 mA, 1 kHz.

²Trigger level VAC: 10 mV, Aac: 10 A

Measurement modes

	BT508	BT510	BT520	BT521
Resistance (mΩ)	•	•	•	•
Battery voltage	•	•	•	•
Voltage dc	•	•	•	•
Voltage ac and frequency (Hz)		•	•	•
Ripple volt		•	•	•
Temperature of negative battery post				•
DC and ac current (and frequency)				•
DMM mode	•	•	•	•
Sequence mode		•	•	•
Discharge measurement mode		•	•	•
Automatic measurement save	•	•	•	•
Wireless communication				•
Memory view	•	•	•	•

General specifications

Size (HxWxD)	22 cm x 10.3 cm x 5.8 cm (9 in x 4 in x 2 in)
Weight	850 g (1.9 lb)
Screen dimensions	7.7 cm x 5.6 cm (3 in x 2.2 in)
Interface	USB mini

Environment specifications

Operating temperature	0 °C to 40 °C
Storage temperature	-20 °C to 50 °C
Lithium-ion battery charging temperature	0 °C to 40 °C
Operating humidity	Non-condensing (10 °C)
	<=80 % RH (at 10 °C to 30 °C)
	<=75 % RH (at 30 °C to 40 °C)
Operating altitude	Sea level to 2000 meters
Storage altitude	Sea level to 12,000 meters
IP rating	IP40
Radio	FCC Class A
Vibration requirements	MIL-PRF-28800F: Class 2
Drop test requirements	1 meter
Temperature coefficients	Add 0.1 x specified accuracy for each degree C above 28 °C or below 18 °C
Safety compliance	600 V CAT III
EMC	IEC 61326
ROHS	China, Europe
Protection Class 2	Pollution Degree II
Battery compliance	UN38.3
	UL2054
	IEC62133
	2G per IEC68-2-26, 25G, and 29

New Product Announcement – Fluke India

Fluke 500 Series Battery Analyzers

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Reduced complexity

Enhanced workflow

Clear results

The New Fluke 500 Series Battery Analyzer is ideal test tool for maintenance, troubleshooting and performance testing of individual storage batteries and battery banks used in critical battery back-up applications.

The intuitive user interface, compact design and rugged construction ensure optimum performance, test results and reliability. Fluke 500 Series Battery Analyzers cover a broad range of battery test functions ranging from DC voltage and resistance tests to full condition testing using an automated string function testing and the test probe integrated infra-red temperature measurement system.

Fluke 500 Series Battery Analyzers have been specifically designed for measurements on stationary batteries including GEL, AGM (Absorbed Glass MAT) and float open cells.

Model	Users	Model-Specific Applications	Target Industries
<ul style="list-style-type: none"> Fluke BT508 Battery Analyzer 	<ul style="list-style-type: none"> Facilities Maintenance Managers 	<ul style="list-style-type: none"> Battery bank troubleshooting 	<ul style="list-style-type: none"> Mission critical facilities (Finance, Hospital, Airport, Broadcasting, Military, Data Centers)
<ul style="list-style-type: none"> Fluke BT510 Battery Analyzer 	<ul style="list-style-type: none"> Data center Facilities 	<ul style="list-style-type: none"> Battery performance testing 	<ul style="list-style-type: none"> Telecom terminals (-48V communication DC source)
<ul style="list-style-type: none"> Fluke BT520 Battery Analyzer 	<ul style="list-style-type: none"> Facilities Engineers 		<ul style="list-style-type: none"> Utility substation (110V DC power and -48V DC source)
<ul style="list-style-type: none"> Fluke BT521 Advanced Battery Analyzer 	<ul style="list-style-type: none"> 3rd Party Engineers (works for a UPS vendor or battery distributor) 		<ul style="list-style-type: none"> Railway (Locomotive, coach and subway) Oil & Gas (supporting electromagnetic valves and cathodic protectors) Wind Turbine (DC pitch control system) Emergency lighting and ventilation

Importance of Battery Testing

Battery banks provide back-up power for your most critical loads, and properly maintaining them is equally critical. The Fluke BT521 Advanced Battery Analyzer is the ideal test tool for maintenance, troubleshooting and performance testing both individual storage batteries and battery banks used in critical battery back-up applications. With an intuitive user interface, streamlined guided workflow, and enhanced interactive test probes the Fluke BT521 reduces testing complexity and increases throughput by allowing the user to perform all necessary test functions from the test probe itself. Rugged mainframe construction and rugged probes with replaceable probe tips have been designed to meet the demands of repeated testing; decreasing failure rates and further reduces cost of ownership.

Key Features & Benefits

- **Key measurements:** Battery resistance, DC and AC voltage, DC and AC current, ripple voltage, frequency and battery temperature.
- **Sequence measurement mode:** automatic or manual sequence testing of battery strings with automatic measurement storage including voltage, resistance and temperature (with Intelligent Probe)
- **Comprehensive logging:** all measured values are automatically captured during testing and can be reviewed on the instrument before downloading for on-the-go analysis.
- **Optimized user interface:** quick, guided setup ensures you're capturing the right data every time, and the combined visual and audio feedback cues reduce the risk of measurement confusion.
- **Advanced analytical PC software:** Battery Management Software delivers professional results through a straightforward Windows® interface, check the health of the system at a glance using set limits, maintain your library of battery test studies
- **Ergonomic Test leads:** rugged coaxial two pole kelvin test pins with remote SAVE button reduce test time and increase efficiency with
- **Test Probe extenders:** Long reach probes for double stacked cells.
- **Intelligent Test Probe Set** – supplied with the Fluke BT521; includes integrated LCD display, infra-red temperature measurement, flashlight, verbal audio feedback and captures voltage readings and temperature logging.
- **Multiple-functionality:** covers all IEEE recommended battery test measurements; includes automated discharge testing function.
- **Wireless communication:** for data download and remote display while measuring
- **Battery Life:** 7.4V 3000mAh Lithium-ion battery for more than eight hours continuous operation
- **Easy storage and carrying:** convenient magnetic hanging strap with shoulder strap for simple daily use and innovative 'hands-free' carrying harness enables complete portability to reduce fatigue when measuring and maintaining long battery strings
- **USB Port:** for fast data download to supplied Data Analysis and Report Management application software
- **Highest safety rating in the industry:** 600 V CAT III, 1,000V MAX rated for safe measurements all around the battery power supply equipment

Frequently Asked Questions

Question: I am using another manufacturer's battery analyzer. Can I compare the data to my historical battery analysis data?

Answer: The Fluke 500 Series Battery Analyzers measure battery resistance, so any historical resistance data can be compared directly.

Question: I have an online voltage monitoring system, why would I need battery resistance testing?

Answer: Monitoring voltage only provides you with part of the picture – specifically battery state-of-charge. When monitoring critical battery back-up systems, it is equally important to understand the battery's state-of-health, which can't be measured using voltage testing. While voltage testing will eventually signal battery degradation, it won't be visible until much later in the battery's useful life and even batteries that measure the correct voltage can fail when a load is applied.

Question: Isn't a discharge test the only way I can really get an accurate measurement of the actual capacity of my batteries?

Answer: Battery resistance testing is complementary to discharge testing. While resistance tests are not capable of replacing discharge testing, resistance values are useful as a trending tool and a high resistance value is a clear indicator that a potentially serious battery health problem is present. In addition, regular discharge testing not only causes damage to overall battery health, but it requires that you take your system off-line and usually takes several hours to complete. Battery resistance testing requires only a short test, can be performed any time without causing harm to your battery system, and doesn't require you to take your system off-line, allowing you to identify weak batteries before performing a discharge test.

Question: Aren't battery resistance tests unreliable?

Answer: Different manufacturers have different methods for measuring internal impedance (Battery resistance, AC impedance, DC impedance or conductance) which can result in measurement variance. A good model from the same manufacturer should show consistent and repeatable readings. This requires a good test resolution, a design that eliminates contact resistance, and good anti-ripple performance. The Fluke 500 Series Battery Analyzers provide this.

Fluke 500 Series Battery Analyzer Mainframes

Item Number	UPC Codes	Description	Warranty	Harmonization Code	ECCN	Country of Origin
4489962	0 95969 72723 5	FLUKE BT508 BATTERY ANALYZER	3 Year	9030320000	3A992	China
4489970	0 95969 72724 2	FLUKE BT510 BATTERY ANALYZER	3 Year	9030320000	3A992	China
4489981	0 95969 72725 9	FLUKE BT520 BATTERY ANALYZER	3 Year	9030320000	3A992	China
4489996	0 95969 72726 6	FLUKE BT521 ADVANCED BATTERY ANALYZER	3 Year	9030320000	3A992	China

ACCESSORIES

4542264	0 95969 76551 0	BTL10 – Std Battery Analyzer Probes	1 Year	9030908831	EAR99	China
4542273	0 95969 76552 7	BTL20 – Intelligent Test Probe Set W/Extender (No Temp)	1 Year	9030908831	EAR99	China
4542286	0 95969 76553 4	BTL21 – Intelligent Test Probe Set W/Extender & Temp Sensor	1 Year	9030908831	EAR99	China
4542258	0 95969 76550 3	BTL-A – Voltage/Current Probe Adapter	1 Year	8504409580	EAR99	China
4542299	0 95969 76554 1	BC500 AC Power Charger	1 Year	8504409550	EAR99	China
4542300	0 95969 76555 8	BP500 Lithium-ion battery 3000mAh	1 Year	8507600000	EAR99	China
4561297	0 95969 77120 7	BT500-PROBE-TIP, 10x Replacement Probe Tips, 4x Tip Covers	N/A	N/A	N/A	China

Package Contents

Equipment	Qty.	BT-508	BT-510	BT-520	BT-521
Meter	1	•	•	•	•
Zero Ohm Calibration Resistor	1	•	•	•	•
Basic test lead (set)	1	•	•	•	•
DMM Test Leads and adapter			•	•	•
Attachable torch	2			•	•
Interactive handle (set)	1			•	•
Short probe and extender without temperature sensor (set)	1			•	
Short probe and extender with temperature sensor (set)	1				•
Accessory AC/DC Current Clamp	1				•
7.4V 3000mAh Lithium-ion battery	1	•	•	•	•
AC charger	1	•	•	•	•
Standard mini-b USB cable (cable length:1m)	1	•	•	•	•
Shoulder strap	1			•	•
Belt strap	1	•	•	•	•
Magnetic strap	1	•	•	•	•
FlukeView® Battery Analyzer (CD) containing USB driver and manuals in all languages	1		•	•	•
Paper document (set)	1	•	•	•	•
Soft carrying case	1	•	•	•	•
Spare fuse	2	•	•	•	•
Paper battery tags	100			•	•
Replacement Probe Tips	2	•	•	•	•
Short Probe Tip Covers		•	•	•	•

Dimensions - Fluke 500 Series Battery Analyzer Standard Models

Description	Weight (kg)	Weight (lbs)	Length (mm)	Width (mm)	Depth (mm)	Length (in)	Width (in)	Depth (in)
Fluke 508 Battery Analyzer (EM Only)	0.85	1.9	220	103	58	9	4	2
Fluke 510 Battery Analyzer	0.85	1.9	220	103	58	9	4	2
Fluke 520 Battery Analyzer	0.85	1.9	220	103	58	9	4	2
Fluke 521 Advanced Battery Analyzer	0.85	1.9	220	103	58	9	4	2

Fluke 500 Series Battery Analyzer Accessories

Description	Weight (kg)	Weight (lbs)	Length (mm)	Width (mm)	Height (mm)	Length (in)	Width (in)	Height (in)
BTL10 –Std Battery Analyzer Probes	0.317	0.70	1658.5	107	31.5	65.295	4.213	1.240
BTL20 – Intelligent Test Probes W/Extenders (No Temp)	1.122	2.474	2030	148	103	79.921	5.827	4.055
BTL21 – Intelligent Test Probes W/Extenders & Temp	1.132	2.50	2030	148	103	79.921	5.827	4.055
BTL-A – Voltage/Current Probe Adapter	0.09	0.20	75	56	30	2.953	2.205	1.181
BC500 AC Power Charger	0.328	0.723	146	76.2	50	5.748	3.000	1.969
BP500 Lithium-ion battery 3000mAh	0.128	0.282	94	42	24	3.701	1.654	0.945
BT500-PROBE-TIP, 10x Tips	0.026	0.057	36	5.5	5.5	1.417	0.217	0.217