FLUKE

TECHNICAL DATA

Fluke 500 Series Battery Analyzer

Key features

The ideal test tool for maintenance, troubleshooting and performance testing of individual stationary batteries and battery banks used in critical battery back-up applications

- **Key measurements** – Internal battery resistance, dc and ac voltage, dc and ac current, ripple voltage, frequency and 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), eliminating the need to press a button each time a measurement needs to be saved.
- **Comprehensive logging** – All measured values are automatically captured during testing and can be reviewed on the instrument before downloading for on the-go analysis.

Product overview: Fluke 500 Series Battery Analyzer

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

battery testing.

- The 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
- Covers a broad range of battery test functions ranging from DC voltage and resistance tests to full condition testing using automated string function testing and the test probe integrated infra-red temperature measurement system
- Designed for measurements on stationary batteries of all types.

Voltage and resistance thresholds

Fluke Battery Analyzers allow you to quickly and easily define upper and lower measurement thresholds or tolerance ranges. During the testing process, measured values are automatically compared to the predefined threshold levels producing a PASS, FAIL or WARN indication after each measurement. A maximum of 10 sets of thresholds can be stored and threshold indications are determined based on the following criterion:

Voltage		**Resistance**		
> Voltage Lower	< Voltage Lower	< Reference	> Reference and Reference x (1+Warning %)	> Reference x (1+Fail)
Pass	Fail	Pass	Warning	Fail

Fluke battery management software

Fluke Battery Management Software Easily allows you to quickly and easily import data from the battery analyzer to a PC. The measurement data and battery profile information is stored and archived with the Management Software and can be used compare results, switch results between conductance and resistance readings and perform trend analysis. All measurement data, battery profile and analysis information can be used to easily generate reports.

- Quick view saved readings
- Profile management
- Histogram of a battery string with end user defined threshold
- Historical trend data of batteries
- Multiple rounds of discharge voltage
- Quick Report Generation
- Upgrade Fluke Battery Analyzer firmware
- Switch measurement results between conductance and resistance readings

Fluke Battery Analyzer mobile app

The BT521 offers wireless communication for data download and remote display while measuring via the dedicated Fluke Battery Analyzer mobile app (note: the Fluke BT521 is not currently Fluke Connect compatible). Using the Fluke Battery Analyze mobile app you can:

- Browse profile
- Review sequence testing data
- E-mail sequence testing data

Fluke BT510 key features:

- **Battery Voltage** – During the internal resistance test, Fluke Battery Analyzers also measure the voltage of the battery under test
- **Discharge Volts** – The Discharge mode collects the voltage of each battery multiple times at a user defined interval during a discharge or load test. Users can calculate the time a battery takes to drop to the cut-off voltage and use this time to determine the capacity loss of the battery
- **Ripple Voltage Test** – Measures unwanted residual ac component of the rectified voltage in dc charging and inverter circuits. Allows users to test ac components in dc charging circuits and find one of the root causes of battery deterioration
- **Meter and Sequence Modes** – The Meter mode is used for a quick test or troubleshooting. In this mode you can save and read the readings in a measurement or time sequence. The Sequence mode is for maintenance tasks with multiple power systems and battery strings. Before a task starts, users can configure a profile for the task for data management and report generation
- **Threshold and Warning** – Users can configure a maximum of 10 sets of thresholds and receive a Pass/ Warning/ Fail indication after each measurement
- **Intercell Strap Resistance Test and Data Management** – Measures the resistance of the intercell connection between batteries in a string.
- **AutoHold** – When AutoHold is turned on, a reading is captured when it remains stable for 1 second. The reading is then released when a new measurement starts
- **AutoSave** – When AutoSave is turned on, measured values are saved to internal memory automatically after an AutoHold reading is captured
- **Fluke Battery Management Software** – Easily import data from the Product to a PC. The measurement data and battery profile information is stored and archived with the Management Software and can be used for comparison and trend analysis. All measurement data, battery profile and analysis information can be used to easily generate reports
- **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
- **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.
- **Highest safety rating in the industry** – CAT III 600 V, 1000 V dc max. rated for safe measurements all around the battery power supply equipment.

Fluke BT520 Key features:

(Designed for measuring batteries in cabinets and hard to reach places)

- All of the above plus
- BTL20 Intelligent Test Probe set, with long and short probe extenders and built-in LCD display and speaker for visual and audio feedback
- BTL20ANG Intelligent Test Probe Set, with long and short angled tip probe extenders (no temperature sensor)
- Large soft carry case

Fluke BT521 Key features:

(Designed for users who need to incorporate temperature measuring)

- All of the above* plus
- BTL21 Intelligent Test Probes with long and short extenders, built-in LCD display and speaker for visual and audio feedback and integrated infrared temperature sensor for taking temperature measurements on the negative battery post with every test
- BTL20ANG Intelligent Test Probe Set, with long and short angled tip probe extenders (no temperature sensor)
- Wireless capability works with Fluke Battery Analyze mobile app (Fluke BA Mobile)*
  - View profile and associated test results from the Battery Analyzer
  - Send out the profile and test results via Email with (.csv) data format

* BTL20 not included with the Fluke BT-521
* Not currently compatible with Fluke Connect® app

Useful resources and rugged tools for Solar professionals

Specifications: Fluke 500 Series Battery Analyzer

	Range	Resolution	Accuracy	BT510	BT520	BT520ANG	BT521	BT521ANG
Baery Resistance / Strap Resistance[1]	3 mΩ	0.001 mΩ	1% + 8	▯	▯		▯	
			1% +68			▯		▯
	30 mΩ	0.01 mΩ	0.8% + 6	▯	▯		▯	
			0.8%+12			▯		▯
	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 baeries) with time stamp							

1. The measurement is based on AC injection method. The injected source signal is < 100 mA, 1 kHz.
2. Trigger level VAC: 10 mV, AAC: 10 A

Measurement Modes	BT510	BT520	BT521
Resistance (mΩ)	✓	✓	✓
Baery voltage	✓	✓	✓
Voltage DC	✓	✓	✓
Voltage AC and frequency (Hz)	✓	✓	✓
Ripple volt	✓	✓	✓
Temperature of negative baery post (using BTL21 straight probes)			✓
DC and AC current (and frequency)			✓
DMM mode	✓	✓	✓
Sequence mode	✓	✓	✓
Discharge measurement mode	✓	✓	✓
Automatic measurement save	✓	✓	✓
Wireless communication			✓
Memory view	✓	✓	✓
General Specifications - Baery Analyzer			
Size (H x W x D)	22 x 10.3 x 5.8 cm (9 x 4 x 2 in)		
Weight	850 g (1.9 lb)		
Screen dimensions	7.7 x 5.6 cm (3 x 2.2 in)		
Interface	USB mini		
Warranty	3 years		
General Specifications - BTL20ANG Angled Measurement Probe			
Long angled probe (overall length)	242.2 cm (95.38 in)		

Short angled probe (overall length)	216.8 cm (85.38 in)
Overall span (coil relaxed)	10.1 cm (4 in)
Overall maximum span (coil extended)	109.2 cm (43 in)
BTL20ANG probe tip angle	20 degrees from horizontal
Environment Specifications	
Operating temperature	0°C to 40°C
Storage temperature	-20°C to 50°C
Lithium-ion baery 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
Baery compliance	UN38.3
	UL2054
	IEC62133
	2 G per IEC68-2-26, 25 G, and 29

Ordering information

Fluke BT521

Fluke BT521 Advanced Battery Analyzer with intelligent test probe set (with temperature measurement)

Includes:

- Battery analyzer
- 4-wire test pin (set)
- BTL10 Basic Test Lead (set)
- TL175 TwistGuard™ Test Leads with adapter
- BTL21 Intelligent Test Probe Set, with extender and temperature sensor
- i410 AC/DC Current Clamp
- BP500 lithium-ion battery
- BC500 AC charger
- mini-USB cable
- Shoulder strap
- Belt strap
- Magnetic hanging strap
- FlukeView® Battery Management Software
- Soft carrying case
- Spare fuses (2)
- Battery tags
- Zero Ohm Calibration Resistor

Fluke BT520

Fluke BT520 Battery Analyzer with intelligent test probe set (no temperature measurement)

Includes:

- Battery analyzer
- 4-wire test pin (set)
- BTL10 Basic Test Lead (set)
- TL175 TwistGuard™ Test Leads with adapter
- BTL20 Intelligent Test Probe Set, with extender (no temperature sensor)
- BP500 lithium-ion battery
- BC500 AC charger
- mini-USB cable
- Shoulder strap
- Belt strap
- Magnetic hanging strap
- FlukeView® Battery Management Software
- Soft carrying case
- Spare fuses (2)
- Battery tags
- Zero Ohm Calibration Resistor

Fluke BT510

Fluke BT510 Basic Battery Analyzer with basic test lead set

Includes:

- Battery analyzer
- 4-wire test pin (set)
- BTL10 Basic Test Lead (set)
- TL175 TwistGuard™ Test Leads with adapter
- BP500 lithium-ion battery
- BC500 AC charger
- mini-USB cable
- Shoulder strap
- Belt strap
- Magnetic hanging strap
- FlukeView® Battery Management Software
- Soft carrying case
- Spare fuses (2)
- Zero Ohm Calibration Resistor

Fluke. *Keeping your world up and running.®*

Fluke Corporation
PO Box 9090, Everett, WA 98206 U.S.A.

For more information call:
In the U.S.A. (800) 443-5853
In Canada (800) 36-FLUKE
From other countries +1 (425) 446-5500
www.fluke.com